

more connected as our knowledge progresses, a state of things that is best expressed by a synopsis of the 7 species which are now distinguished:—

A. Both pairs of limbs very distinct.

Hind limb pentadactyle ; 28 scales round the body	1. <i>ænea</i> Wgm.
„ didactyle ; 26 „ „	2. <i>didactyla</i> Blgr.
„ „ 24 „ „	3. <i>annectens</i> Blgr.
„ monodactyle ; 26 „ „	4. <i>anguina</i> L.
„ „ 24 „ „	5. <i>tenuior</i> Gthr.

B. Fore limb very minute or absent ; hind limb monodactyle.

Fore limb distinct ; 26 scales round the body	6. <i>miopropus</i> Blgr.
„ absent ; 22 „ „	7. <i>macrolepis</i> Cope.

EXPLANATION OF PLATE X.

Lacerta jacksoni, p. 96. Upper and lower views and side view of head.

6. A Revision of the African and Syrian Fishes of the Family *Cichlidæ*.—Part II.¹ By G. A. BOULENGER, F.R.S., F.Z.S.

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(Plates XI. & XII.)

When I had the honour of reading the first part of this paper before this Society, nearly a year ago, I could not have foreseen the enormous additions to our knowledge of the genera and species of African *Cichlidæ* which were so soon to follow through the examination of the collections made in Lake Tanganyika by Mr. Moore, and in the Congo by the Officers in the service of the Congo Free State. The Tanganyika forms have been described in the 'Transactions' of this Society (vol. xv. pt. 1, 1898), the Congo forms are being published in the 'Annales du Musée du Congo.'

In the first part I distinguished 9 genera and diagnosed 33 species of the first 6 genera, reserving for the second part the definitions of the species of the genera *Tilapia*, *Docimodus*, and *Paretroplus*. The additions to which I have alluded necessitate an alteration in this plan, and in order to bring my account up to date I have decided to prepare a new synopsis of the genera, amounting now to 19 instead of 9, and to enumerate all the species of the genera previously dealt with by me, with a mere reference to the first part or to the 'Transactions' paper in which the Tanganyika forms have been described and figured.

¹ Cf. P. Z. S. 1898, p. 132.

Synopsis of the Genera.

I. No sheath to the vertical fins.

A. Anal spines V to X; teeth conical, at least in the outer row.

- Jaws with a band of very small conical teeth, with moderately enlarged canines in front 1. *Lamprologus* Schilth.
 Jaws with a band of very small conical teeth, with a few curved canines in front, the outer of which are very large and tusk-like 2. *Julidochromis* Blgr.
 Jaws with a series of conical teeth followed by a broad band of minute tricuspid teeth 3. *Telmatochromis* Blgr.

B. Anal spines III; teeth not notched, unicuspid, numerous.

1. Teeth conical or fang-like; alveolar surface of jaws narrow or moderately broad.

a. No pad-like papillose prominence close to the upper part of the branchial arches.

- Teeth in one or two series, with more or less enlarged or canine-like ones at the symphysis 4. *Hemichromis* Ptrs.
 Teeth in two or more series, outer longest and more or less curved inward; anal with 6 to 12 soft rays 5. *Paratilapia* Blkr.
 Several rows of fang-like teeth; scales small and irregular; anal with 16 soft rays 6. *Bathybates* Blgr.
 Teeth in two series; outer mandibular teeth pointing outwards, perpendicular to the others 7. *Ectodus* Blgr.

b. A pad-like prominence close to the upper part of the branchial arches.

- Teeth in two or more series, outer largest and more or less distinctly curved inward 8. *Pelmatochromis* Sldr.
 Teeth in one or two series, some of the larger ones with the crown bent at an angle to the shaft and directed forward or backward 9. *Chromidotilapia* Blgr.

2. Teeth not conical.

- Alveolar surface of jaws extremely broad, with innumerable minute teeth with compressed, oblique crowns 10. *Corematodus* Blgr.
 Jaws with rather large spatulate teeth with truncated crowns disposed in oblique transverse rows of two or three 11. *Eretmodus* Blgr.

C. Anal spines VI; jaws with bands of minute tricuspid teeth, an outer row of bicuspid teeth, and enlarged conical teeth at the sides of the præmaxillary 12. *Tropheus* Blgr.

D. Anal spines III or IV; teeth all or part notched or bi- or tricuspid, in two or more rows.

- Jaws with broad bands of minute bicuspid teeth, with an outer series of larger bicuspid teeth, and a single series of sharply differentiated conical teeth at the sides of the præmaxillary 13. *Simochromis* Blgr.
 Alveolar surface of jaws narrow or moderately broad, all or most of the outer teeth bi- or tricuspid 14. *Tilapia* Smith.

- Alveolar surface of jaws narrow, with two series of notched teeth; a pair of enlarged, incisor-like teeth at the symphysis; an adipose crest on the occiput 15. *Steatocranus* Blgr.
- Alveolar surface of jaws very broad; outer teeth large, with nail-shaped entire crowns, those of the inner rows tricuspid 16. *Docimodus* Blgr.
- E. Anal spines III; teeth large, few, in a single series.
- Teeth with swollen bases and low, compressed, slightly notched crowns 17. *Perissodus* Blgr.
- Teeth compressed and truncate, curved and directed backwards 18. *Plecodus* Blgr.
- II. Vertical fins folding in a scaly sheath; anal spines VIII to X; teeth obtuse, in a single row 19. *Paretroplus* Blkr.

1. LAMPROLOGUS Schilth.

P. Z. S. 1898, p. 134.

1. LAMPROLOGUS FASCIATUS Blgr.

Tr. Z. S. xv. p. 7.

Lake Tanganyika.

2. LAMPROLOGUS COMPRESSICEPS Blgr.

Tr. Z. S. xv. p. 7.

Lake Tanganyika.

3. LAMPROLOGUS MOORII Blgr.

Tr. Z. S. xv. p. 8.

Lake Tanganyika.

4. LAMPROLOGUS CONGOENSIS Schilth.

P. Z. S. 1898, p. 134.

Congo.

5. LAMPROLOGUS MODESTUS Blgr.

Tr. Z. S. xv. p. 8.

Lake Tanganyika.

6. LAMPROLOGUS ELONGATUS Blgr.

Tr. Z. S. xv. p. 9.

Lake Tanganyika.

7. LAMPROLOGUS FURCIFER Blgr.

Tr. Z. S. xv. p. 9.

Lake Tanganyika.

2. JULIDOCROMIS Blgr.

Tr. Z. S. xv. p. 11.

1. JULIDOCROMIS ORNATUS Blgr.

Tr. Z. S. xv. p. 12.

Lake Tanganyika.

3. *TELMATOCHROMIS* Blgr.

Tr. Z. S. xv. p. 10.

1. *TELMATOCHROMIS VITTATUS* Blgr.

Tr. Z. S. xv. p. 10.

Lake Tanganyika.

2. *TELMATOCHROMIS TEMPORALIS* Blgr.

Tr. Z. S. xv. p. 11.

Lake Tanganyika.

4. *HEMICHROMIS* Peters.

P. Z. S. 1898, p. 134.

1. *HEMICHROMIS FASCIATUS* Peters.

P. Z. S. 1898, p. 135.

West Africa.

2. *HEMICHROMIS BIMACULATUS* Gill.

P. Z. S. 1898, p. 135.

North and West Africa.

3. *HEMICHROMIS* ? *ANGOLENSIS* Sldr.

P. Z. S. 1898, p. 136.

Angola.

5. *PARATILAPIA* Blkr.

P. Z. S. 1898, p. 137.

1. *PARATILAPIA POLLENI* Blkr.

P. Z. S. 1898, p. 138.

Madagascar.

2. *PARATILAPIA BLEEKERI* Sauv.

P. Z. S. 1898, p. 139.

Madagascar.

3. *PARATILAPIA TYPUS* Blkr.

P. Z. S. 1898, p. 139.

Madagascar.

4. *PARATILAPIA SACRA* Gthr.

P. Z. S. 1898, p. 139.

Lake of Galilee.

5. *PARATILAPIA LONGIROSTRIS* Hilgend.

P. Z. S. 1898, p. 140.

Lake Victoria Nyanza.

6. *PARATILAPIA MOFFATI* Casteln.

P. Z. S. 1898, p. 140.

S.E. Africa.

7. *PARATILAPIA ROBUSTA* Gthr.
P. Z. S. 1898, p. 141.
Lake Nyassa ; Zambesi.
8. *PARATILAPIA CAVIFRONS* Hilgend.
P. Z. S. 1898, p. 141.
Lake Victoria Nyanza.
9. *PARATILAPIA RETRODENS* Hilgend.
P. Z. S. 1898, p. 142.
Lake Victoria Nyanza.
10. *PARATILAPIA AFRA* Gthr.
P. Z. S. 1898, p. 142.
Lake Nyassa.
11. *PARATILAPIA BLOYETI* Sauv.
P. Z. S. 1898, p. 143.
East Africa.
12. *PARATILAPIA SERRANUS* Pfeff.
P. Z. S. 1898, p. 143.
Lake Victoria Nyanza ; German East Africa.
13. *PARATILAPIA SCHWEBISCHII* Sauv.
P. Z. S. 1898, p. 144.
Upper Ogowe.
14. *PARATILAPIA MODESTA* Gthr.
P. Z. S. 1898, p. 144.
Lake Nyassa and Shiré River.
15. *PARATILAPIA LIVINGSTONII* Gthr.
P. Z. S. 1898, p. 145.
Lake Nyassa and Shiré River.
16. *PARATILAPIA INTERMEDIA* Gthr.
P. Z. S. 1898, p. 145.
Lake Nyassa and Shiré River.
17. *PARATILAPIA PEEFFERI* Blgr.
Tr. Z. S. xv. p. 12.
Lake Tanganyika.
18. *PARATILAPIA MACROPS* Blgr.
Tr. Z. S. xv. p. 13.
Lake Tanganyika.
19. *PARATILAPIA DIMIDIATA* Gthr.
P. Z. S. 1898, p. 145.
Lake Nyassa and Shiré River.

20. *PARATILAPIA LONGICEPS* Gthr.

P. Z. S. 1898, p. 146.

Lake Nyassa and Shiré River.

21. *PARATILAPIA VENTRALIS* Blgr.

Tr. Z. S. xv. p. 13.

Lake Tanganyika.

22. *PARATILAPIA FURCIFER* Blgr.

Tr. Z. S. xv. p. 14.

Lake Tanganyika.

23. *PARATILAPIA LEPTOSOMA* Blgr.

Tr. Z. S. xv. p. 14.

Lake Tanganyika.

6. *BATHYBATES* Blgr.

Tr. Z. S. xv. p. 15.

1. *BATHYBATES FEROX* Blgr.

Tr. Z. S. xv. p. 15.

Lake Tanganyika.

7. *ECTODUS* Blgr.

Tr. Z. S. xv. p. 21.

1. *ECTODUS DESCAMPSII* Blgr.

Tr. Z. S. xv. p. 21.

Lake Tanganyika.

2. *ECTODUS MELANOGENYS* Blgr.

Tr. Z. S. xv. p. 21.

Lake Tanganyika.

8. *PELMATOCHROMIS* Stdr.

P. Z. S. 1898, p. 147.

1. *PELMATOCHROMIS BUETTIKOFERI* Stdr.

P. Z. S. 1898, p. 147.

Liberia.

2. *PELMATOCHROMIS JENTINKI* Stdr.

P. Z. S. 1898, p. 148.

Liberia.

3. *PELMATOCHROMIS LATERALIS* Blgr.

P. Z. S. 1898, p. 148.

Congo.

4. *PELMATOCHROMIS CONGICUS* Blgr.

P. Z. S. 1898, p. 149.

Congo.

5. *PELMATOCHROMIS OCELLIFER*, sp. n.

3 series of teeth in both jaws. Depth of body $2\frac{1}{3}$ in total length, length of head $2\frac{2}{3}$. Snout as long as eye, which is $3\frac{1}{2}$ times in length of head and equals interorbital width; maxillary extending to below anterior border of eye; 3 series of scales on the cheek; opercle naked. Gill-rakers very short, 7 on lower part of anterior arch. Dorsal XV 10; spines subequal from the fifth, a little more than $\frac{1}{2}$ length of head; middle soft rays produced into filaments. Pectoral $\frac{3}{4}$ length of head. Ventral with produced outer rays, reaching anal spines. Anal III 8; third spine slightly shorter than longest dorsals. Caudal rounded. Caudal peduncle deeper than long. Scales cycloid, $29\frac{2\frac{1}{2}}{10}$; lat. l. $\frac{19}{8-9}$. Olive above, yellowish beneath; five dark olive bars, much broader than the spaces between them; a blackish opercular spot; dorsal with blackish spots and a large blackish, light-edged ocellus on the last spines and the anterior soft rays; ventrals, anal, and caudal blackish.

Total length 85 millim.

A single specimen from Monsembé, Upper Congo. Presented to the British Museum by the Rev. J. H. Weeks.

6. *PELMATOCHROMIS WELWITSCHI* Blgr.

P. Z. S. 1898, p. 149.

Angola.

7. *PELMATOCHROMIS GUENTHERI* Sauv.

P. Z. S. 1898, p. 150.

Gold Coast.

8. *PELMATOCHROMIS SUBOCELLATUS* Gthr.

P. Z. S. 1898, p. 150.

Gaboon.

9. *CHROMIDOTILAPIA* Blgr.

P. Z. S. 1898, p. 151.

1. *CHROMIDOTILAPIA KINGSLEYÆ* Blgr.

P. Z. S. 1898, p. 151.

Gaboon, Ogowe.

2. *CHROMIDOTILAPIA* (?) *FREDERICI* Casteln.

P. Z. S. 1898, p. 151.

Lake Ngami.

10. *COREMATODUS* Blgr.

P. Z. S. 1898, p. 152.

1. *COREMATODUS SHIRANUS* Blgr.

P. Z. S. 1898, p. 152.

Upper Shiré River.

11. ERETMODUS Blgr.

Tr. Z. S. xv. p. 16.

1. ERETMODUS CYANOSTICTUS Blgr.

Tr. Z. S. xv. p. 16.

Lake Tanganyika.

12. TROPHEUS Blgr.

Tr. Z. S. xv. p. 17.

1. TROPHEUS MOORII Blgr.

Tr. Z. S. xv. p. 18.

Lake Tanganyika.

13. SIMOCHROMIS Blgr.

Tr. Z. S. xv. p. 19.

1. SIMOCHROMIS DIAGRAMMA Gthr.

Tr. Z. S. xv. p. 19.

Lake Tanganyika.

14. TILAPIA.

Tilapia, Smith, Ill. Zool. S. Afr., Fish. (1840).*Sarotherodon*, Rüpp. Verz. Mus. Senck. iv. p. 21 (1852); Günth. Cat. iv. p. 273 (1862).*Coptodon*, Gervais, Bull. Soc. Agric. Hérault, 1853, p. 81.*Haligenes*, Günth. Proc. Zool. Soc. 1859, p. 471.*Chromis*, Günth. Cat. iv. p. 267.*Ptychochromis*, Steind. Sitzb. Ak. Wien, lxxii. i. 1880, p. 248.*Haplochromis*, Hilgend. Sitzb. Ges. naturf. Fr. Berl. 1888, p. 76.*Oreochromis*, Günth. Proc. Zool. Soc. 1889, p. 70.*Ctenochromis*, Pfeff. Jahrb. Hamb. wiss. Anst. x. 1893, p. 149.

Body short or moderately elongate; scales cycloid or ctenoid. Two or more series of small teeth in the jaws, all or greater part notched or bi- or tricuspid. Maxillary entirely concealed under the præorbital when the mouth is closed, or a small portion of its distal extremity exposed. Dorsal with 13 to 19 spines, anal with 3 or 4. Vertebrae 28-32 (14-17+13-16)¹.

Numerous species, from Syria, Africa, and Madagascar.

¹ 17+15=32 in *T. nilotica*.17+15=32 in *T. galilæa*.15+13=28 in *T. lata*.15+16=31 in *T. desfontainesi*.14+14=28 in *T. oligacanthus*.

In four of these species the third vertebra bears a very strong hæmal process. The process is very feeble in *T. desfontainesi*.

Synopsis of the Species.

I. Scales cycloid, without marginal denticulation ; third anal spine not longer than longest dorsal spine.

A. Gill-rakers 15 to 25 on lower part of anterior arch ; 2 or 3 series of scales on the cheek.

1. Anal spines 4 ; pectoral not longer than head, not extending to origin of anal ; dorsal XV-XVII 10-12.

Teeth in 7 or 8 series ; caudal peduncle a little longer than deep ; maxillary extending to between nostril and eye ; diameter of eye 5 times in length of head ; Sq. $35\frac{5}{15}$ 1. *hunteri* Gthr.

Teeth in 4 or 5 series ; caudal peduncle slightly deeper than long ; maxillary extending nearly to below anterior border of eye ; diameter of eye 5 to $5\frac{1}{2}$ times in length of head ; Sq. $32\frac{3-4}{13}$ 2. *nigra* Gthr.

Teeth in 5 to 7 series ; caudal peduncle not longer than deep ; maxillary extending to between nostril and eye ; diameter of eye 4 to $4\frac{1}{2}$ times in length of head ; Sq. 31-32 $\frac{3}{13}$ 3. *shirana* Blgr.

B. Anal spines 3 (exceptionally 4 in *T. mossambica*).

1. Dorsal XV-XVIII 10-14 ; pectoral extending to origin of anal or beyond.

a. Caudal rounded, the membrane between the rays scaleless, except at the base.

Pectoral not longer than head ; mouth large, nearly as broad as head ; Sq. 30-33 $\frac{3\frac{1}{2}-4\frac{1}{2}}{13-15}$ 4. *mossambica* Ptrs.

Pectoral at least as long as head ; mouth $\frac{1}{2}$ to $\frac{2}{3}$ width of head ; Sq. 31-35 $\frac{4-5}{14-15}$ 5. *nilotica* L.

b. Caudal truncate or slightly emarginate ; pectoral at least as long as head.

a. Caudal peduncle at least as long as deep.

Sq. 32-33 $\frac{4}{19-20}$; lat. 1. $\frac{14-18}{8-12}$; dorsal spines equal in length from the sixth 6. *tanganica* Gthr.

Sq. 31-34 $\frac{3\frac{1}{2}-4\frac{1}{2}}{14-15}$; lat. 1. $\frac{19-21}{12-17}$; last dorsal spine longest. 7. *natalensis* M. Web.

β . Caudal peduncle deeper than long.

* Maxillary not extending to below anterior border of eye.

† Sq. 31-34 $\frac{2\frac{1}{2}}{14-15}$; mouth not more than half as broad as head 8. *galilæa* Hasselq.

†† Sq. 28-30 $\frac{2\frac{1}{2}-3}{11-12}$.

Depth of body much greater than length of head ; last dorsal spine longest 9. *microcephala* Blkr.

Depth of body not much greater than length of head ; last dorsal spine longest 10. *macrocephala* Blgr.

Depth of body much greater than length of head ; dorsal spines nearly equal in length from the sixth. 11. *nigripinnis* A. Dum.

- ** Maxillary extending to below anterior border of eye; depth of body equal to length of head; Sq. 30-31 $\frac{3-3\frac{1}{2}}{10}$. 12. *dumerili* Stdr.
- c. Caudal rounded, densely scaled; dorsal with 9 or 10 soft rays; Sq. 29-30 $\frac{3-3\frac{1}{2}}{13}$. 13. *lepidura* Blgr.
- d. Caudal emarginate, upper corner pointed, lower rounded and shorter; dorsal spines subequal from the middle ones; caudal peduncle a little longer than deep; Sq. 32-35 $\frac{3\frac{1}{2}}{15-16}$ 14. *squamipinnis* Gthr.
2. Dorsal XIV 10-14.
- Anal III 10; 3 series of scales on cheek 15. *macrocentra* A. Dum.
- Anal III 10; 2 series of scales on cheek 16. *pleuromelas* A. Dum.
- Anal III 7; 3 series of scales on cheek 17. *heudeloti* A. Dum.
- B. Gill-rakers 8 to 14 on lower part of anterior arch.
1. Dorsal with not more than 16 spines.
- a. Pectoral not extending to vertical of origin of anal.
- a. Caudal rounded or truncate; not produced at the angles; pectoral not longer than head.
- * 2 series of scales on cheek; D. XIII-XV 9-11; A. III 9; Sq. 27-29 $\frac{2\frac{1}{2}-3}{9-10}$ 18. *sparmani* Smith.
- ** 3 or 4 series of scales on cheek; Sq. 29-32 $\frac{3-3\frac{1}{2}}{10-17}$.
- † Dorsal XIII-XV 9-13; A. III 7-9.
- Maxillary extending a little beyond vertical of anterior border of eye 19. *ovalis* Stdr.
- Maxillary extending to below anterior border of eye; width of mouth $\frac{3}{4}$ to $\frac{1}{2}$ width of head 20. *menzalensis* Mitch.
- Maxillary extending to below anterior border of eye; width of mouth $\frac{3}{4}$ to $\frac{1}{2}$ width of head 21. *zillii* Gerv.
- Maxillary extending to between nostril and eye; width of mouth $\frac{3}{4}$ to $\frac{1}{2}$ width of head 22. *magdalene* Lort.
- †† D. XVI 8-13.
- ‡ Depth of body greater than length of head.
- Dorsal with 8 soft rays, anal with 9; caudal rounded. 23. *tholoni* Sauv.
- Dorsal with 12 or 13 soft rays, anal with 10 or 11; caudal rounded 24. *cabre* Blgr.
- Dorsal with 12 soft rays, anal with 10; caudal truncate 25. *marie* Blgr.
- ‡‡ Length of head greater than depth of body; dorsal with 8 or 9 soft rays, anal with 6 or 7; caudal rounded, subtruncate 26. *horii* Gthr.
- *** 5 series of scales on the cheek; D. XIV 11; A. III 10.
- Last dorsal spine longest; Sq. 25-26 $\frac{4}{x}$ 27. *melanopleura* A. Dum.
- Dorsal spines subequal from the 5th; Sq. 29 $\frac{4}{13}$... 28. *ceruleomaculata* [Roch.

**** 6 or 7 series of scales on the cheek;

D. XV 10; A. III 8.

Sq. 33 $\frac{3}{8}$; dorsal spines subequal from the 5th..... 29. *jallæ* Blgr.

Sq. 30 $\frac{5}{12}$; last dorsal spine longest 30. *humilis* Stdr.

β. Caudal produced at the angles; pectoral a little longer than head;
2 series of scales on the cheek;
D. XV-XVI 11-12; A. III 9; Sq.

31 $\frac{3}{11}$ 31. *guineensis* Blkr.

b. Pectoral extending to vertical of origin of anal, or beyond.

α. 3 or 4 series of scales on the cheek;
dorsal with no more than 14 soft rays.

* Pectoral at least as long as head;
D. XV-XVI 9-14; A. III 8-10.

† Depth of body nearly equal to length of head.

Soft dorsal much prolonged, with 12 or 13 rays;

Sq. 28-31 $\frac{4}{12}$ 32. *vorax* Pfeff.

Soft dorsal not prolonged, with 9 or 10 soft rays;

Sq. 30-32 $\frac{3\frac{1}{2}}{15}$ 33. *simonis* Gthr.

†† Depth of body much greater than length of head.

Caudal truncate or slightly emarginate; Sq. 29-31

$\frac{2\frac{1}{2}-3\frac{1}{2}}{11-13}$ 34. *lata* Gthr.

Caudal truncate; Sq. 26 $\frac{3\frac{1}{2}}{X}$ 35. *rangii* A. Dum.

Caudal rounded; Sq. 30-32 $\frac{3}{12-13}$; 4 series of scales on the cheek; maxillary not extending quite to below anterior border of eye 36. *rendalli* Blgr.

Caudal rounded; Sq. 32 $\frac{3-3\frac{1}{2}}{10}$; 3 series of scales on the cheek; maxillary extending to below anterior border of eye 37. *affinis* A. Dum.

** Pectoral shorter than head; D. XIV

11; A. III 9; Sq. 29 $\frac{3-3\frac{1}{2}}{11}$ 38. *burtoni* Gthr.

β. 5 or 6 series of scales on the cheek;
D. XIV-XV 15-16; A. III 10-11;

Sq. 29-30 $\frac{4-5}{10-12}$ 39. *buettikoferi* Hubr.

2. D. XVIII 8; A. III 7; caudal rounded ... 40. *polycentra* A. Dum.

II. Scales mostly with marginal denticulation.

A. Third anal spine not longer than longest dorsal spine.

1. Dorsal with 13 to 17 spines.

a. Pectoral extending as far as vertical of origin of anal; 3 or 4 series of scales on the cheek.

α. Sq. 32-34 $\frac{3-4\frac{1}{2}}{10-13}$.

* Maxillary extending to between nostril and eye; caudal peduncle longer than deep.

Caudal truncate or feebly emarginate; 11 or 12 gill-rakers on lower part of anterior arch..... 41. *kirki* Gthr.

- Caudal with crescentic emargination; 8 or 9 gill-rakers on lower part of anterior arch..... 42. *lethrinus* Gthr.
- Caudal slightly notched, pointed above, rounded below; 11 or 12 gill-rakers on lower part of anterior arch 43. *johnstoni* Gthr.
- ** Maxillary extending nearly to below anterior border of eye; caudal peduncle as long as deep 44. *pectoralis* Pfeff.
- β. Sq. 28-31 $\frac{6-7}{11-12}$; maxillary extending to below anterior border of eye or a little beyond 45. *nuchisquamulata* [Hilg.
- b. Pectoral not extending to origin of anal.
- α. Sq. 35 $\frac{4-5}{14}$; 21 gill-rakers on lower part of anterior arch; caudal rather deeply emarginate; caudal peduncle $1\frac{1}{2}$ as long as deep..... 46. *rostrata* Blgr.
- β. Sq. 31 $\frac{5-7}{13}$; 10 gill-rakers on lower part of anterior arch; caudal rounded; caudal peduncle slightly longer than deep 47. *williamsi* Gthr.
- γ. Sq. 29-33 $\frac{3-5}{11-16}$; 8-10 gill-rakers on lower part of anterior arch; caudal peduncle as long as deep or a little deeper than long.
- * Maxillary extending to below anterior border of eye; Sq. 30-33 $\frac{3-4}{11-12}$.
- 3 or 4 series of scales on the cheek; last dorsal spine longest... 48. *calliptera* Gthr.
- 4 or 5 series of scales on the cheek; dorsal spines subequal from the 5th 49. *monteiri* Blgr.
- ** Maxillary extending to between nostril and eye; Sq. 29-30 $\frac{3-4}{11-12}$.
- 3 or 4 series of scales on the cheek; dorsal spines equal in length from the 4th or 5th 50. *fasciata* Perugia.
- 4 or 5 series of scales on the cheek; last dorsal spine longest 51. *acuticeps* Stdr.
- *** Maxillary extending to below anterior border of eye; Sq. 30-33 $\frac{4-6}{12-16}$.
- Teeth in 6 series; upper profile of snout curved 52. *livingstonii* Blgr.
- Teeth in 3 series; upper profile of snout straight..... 53. *desfontainesi* Lacép.
- δ. Sq. 26-28 $\frac{2\frac{1}{2}-3}{11-13}$; 8 gill-rakers on lower part of anterior arch; caudal rounded; caudal peduncle as long as deep.
- Last dorsal spine longest; anal with 7 soft rays 54. *flavii-josephi* Lort.
- Dorsal spines subequal from the 3rd; anal with 8 to 10 soft rays..... 55. *philander* M. Web.
2. Dorsal with 18 or 19 spines.
- D. XVIII 10; A. III 6-7; Sq. 33-35 $\frac{5-6}{12-13}$; lips produced into long pointed lobes 56. *labiata* Blgr.
- D. XVIII 8; A. III 8; Sq. 31 $\frac{6-7}{16}$ 57. *zebra* Blgr.
- D. XIX 6; A. III 6; Sq. 34 $\frac{5-6}{12}$ 58. *aurata* Blgr.

B. Third anal spine longer than longest dorsal spine.

1. Head $2\frac{3}{4}$ to 3 times in total length; D. XIII-XIV 10-13; A. III 7-9.

a. Soft dorsal rays much shorter than head;

Sq. 32-34 $\frac{3\frac{1}{2}-4\frac{1}{2}}{14-15}$ 59. *oligacanthus* Blkr.

b. Middle soft dorsal rays produced, at least as long as head.

Sq. 32-34 $\frac{4-5}{14-15}$ 60. *madagascariensis* [Sauv.

Sq. 35 $\frac{6}{16}$ 61. *grandidieri* Sauv.

2. Head $3\frac{1}{2}$ times in total length; D. XIV-XV 12-13; A. III 10; middle soft dorsal and

anal rays produced; Sq. 31-33 $\frac{4}{15}$ 62. *betsilcana* Blgr.

1. TILAPIA HUNTERI.

Oreochromis hunteri, Günth. Proc. Zool. Soc. 1889, p. 70.

Teeth very small, in 7 or 8 closely-set series in both jaws. Depth of body equal to length of head, $3\frac{1}{2}$ times in total length. Snout with concave upper profile, nearly twice diameter of eye, which is 5 times in length of head and twice in interorbital width; mouth rather large, nearly $\frac{3}{4}$ width of head; maxillary extending to between nostril and eye; 3 series of scales on the cheek. Dorsal XVII 11; last spine longest, $\frac{1}{3}$ length of head, $\frac{1}{2}$ longest soft rays. Pectoral pointed, a little shorter than the head, not extending to origin of anal. Ventral reaching vent. Anal IV 10; fourth spine longest, a little shorter than last dorsal. Caudal truncate. Caudal peduncle a little longer than deep. Scales cycloid, 35 $\frac{5}{15}$; lat. l. $\frac{19}{16}$. Dark brown, tinged with rusty; vertical fins and ventrals blackish.

Total length 300 millim.

Crater Lake, Kilimandjaro.

2. TILAPIA NIGRA.

Oreochromis niger, Günth. Proc. Zool. Soc. 1894, p. 89, pl. ix.

Teeth very small, in 4 or 5 closely-set series in both jaws. Depth of body $2\frac{1}{4}$ to $2\frac{1}{2}$ in total length, length of head 3 to $3\frac{1}{2}$ times. Snout with straight upper profile, nearly twice diameter of eye, which is 5 to $5\frac{1}{2}$ times in length of head and 2 to $2\frac{1}{4}$ in interorbital width; mouth rather large, $\frac{2}{3}$ to $\frac{3}{4}$ width of head; maxillary extending nearly to below anterior border of eye; 2 or 3 series of scales on the cheek. Gill-rakers short, 17 on lower part of anterior arch. Dorsal XVII 11-12; last spine longest, not quite $\frac{1}{2}$ length of head; middle soft rays much produced, more than twice as long as longest dorsal spine. Pectoral pointed, as long as the head, not extending to origin of anal. Ventral reaching anal. Anal IV 9; fourth spine longest, nearly as long as last dorsal; soft rays produced. Caudal truncate or slightly

emarginate. Caudal peduncle slightly deeper than long. Scales cycloid, $32\frac{3-4}{13}$; lat. l. $\frac{19-20}{15-17}$. Greenish black; a black opercular spot; fins blackish, soft dorsal and caudal with more or less distinct round light spots between the rays.

Total length 250 millim.

Pools on the Kibwesi River, British East Africa.

3. *TILAPIA SHIRANA*.

Oreochromis shiranus Bouleng. Proc. Zool. Soc. 1896, p. 916, fig.

Tilapia shirana Bouleng. Tr. Zool. Soc. xv. 1898, p. 4.

Teeth very small, in 5 to 7 very closely-set series in both jaws. Depth of body $2\frac{1}{3}$ to $2\frac{3}{5}$ in total length, length of head 3 times. Snout with straight upper profile, $1\frac{1}{2}$ to $1\frac{2}{3}$ diameter of eye, which is 4 to $4\frac{1}{2}$ times in length of head and $1\frac{2}{3}$ to 2 in interorbital width; mouth moderate, $\frac{3}{4}$ to $\frac{2}{3}$ width of head; maxillary extending to between nostril and eye; 2 series of scales on the cheek. Gill-rakers short, 15 to 18 on lower part of anterior arch. Dorsal XVI-XVII 10-12; last spine longest, $\frac{1}{2}$ length of head or a little less. Ventral reaching vent. Anal IV 9-10; fourth spine longest, as long as and stronger than middle dorsals. Caudal peduncle not longer than deep. Scales cycloid, $31-32\frac{3}{13}$; lat. l. $\frac{20-21}{15-16}$.

Total length 210 millim.

Upper Shiré River, Nyassaland.

4. *TILAPIA MOSSAMBICA*.

Chromis (Tilapia) mossambicus, Peters, Mon. Berl. Ac. 1852, p. 681.

Chromis niloticus, part., Peters, Arch.^e f. Nat. 1855, p. 267; Günther, Cat. iv. p. 510 (1862); Peters, Reise n. Mossamb. iv. p. 23, pl. iv. fig. 4 (1868).

Chromis mossambicus, part., Günth, l. c. p. 268.

Tilapia mossambica, Bouleng. Tr. Zool. Soc. xv. 1888, p. 4.

Teeth very small, in 4 to 7 series in both jaws. Depth of body $2\frac{1}{2}$ to $2\frac{3}{4}$ times in total length, length of head $2\frac{2}{3}$ to 3 times. Snout with concave upper profile, 2 to $2\frac{1}{2}$ times diameter of eye, which is 5 to 6 times in length of head and 2 to $2\frac{1}{2}$ times in interorbital width; mouth large, nearly as broad as the head; maxillary extending to below anterior border of eye or not quite so far; 2 or 3 series of scales on the cheek, forming a nearly straight or slightly oblique horizontal band, which, under the eye, is at least nearly as broad as the diameter of the eye; large scales on the opercle. Gill-rakers short, 17 to 20 on lower part of anterior arch. Dorsal XV-XVI 10-11; last spine longest, $\frac{1}{3}$ to $\frac{2}{5}$ length of head, $\frac{1}{2}$ to $\frac{2}{3}$ longest soft rays. Pectoral pointed, as long as or a little shorter than the head, extending at least as far as origin of anal. Ventral reaching vent or origin of anal. Anal

III (rarely IV) 9-10; third spine a little shorter but stronger than last dorsal spine. Caudal rounded. Caudal peduncle as long as deep. Scales cycloid, 30-33 $\frac{3\frac{1}{2}-4\frac{1}{2}}{13-15}$; lat. l. $\frac{19-21}{10-15}$. Brownish or olive, vertical fins and ventrals darker.

Total length 270 millim.

East Africa, from the Coast of Zanzibar to the Zambesi.

5. *TILAPIA NILOTICA*.

Labrus niloticus, Linn. in Hasselq. Iter Palæst. p. 346 (1757), and S. N. i. p. 477 (1766); Sonnini, Voy. Égypte, ii. p. 395, pl. xxvii. fig. 1 (1799).

Chromis nilotica, Cuv., Guérin, Icon. R. An. i. Poiss. pl. xlv. fig. 1 (1844); Sauv. Bull. Soc. Philom. (7) iv. 1880, p. 211; Lortet, Ann. Mus. Lyon, iii. 1883, p. 137, pl. vii.; Mitchell, Rep. Fish. L. Menzaleh, p. 12, pl. ii. (1895); Günth. Proc. Zool. Soc. 1896, p. 218.

Chromis niloticus, part., Günth. Cat. iv. p. 267 (1862), and Proc. Zool. Soc. 1864, p. 490; Steind. Verh. zool.-bot. Ges. Wien, xiv. 1864, p. 226; Peters, Reise Mossamb. iv. p. 23 (1868); Günth. in Petherick, Trav. C. Afr. ii. p. 216 (1869); Steind. Sitzb. Ak. Wien, lx. 1870, p. 96; Pfeffer, Jahrb. Hamb. wiss. Anst. x. 1893, p. 149; Vinciguerra, Ann. Mus. Genova, (2) xv. 1895, p. 28; Pfeffer, Thierw. O.-Afr., Fische, p. 10 (1896).

Chromis guentheri, Steind. Verh. zool.-bot. Ges. Wien, xiv. 1864, p. 228, pl. viii. figs. 3 & 4.

Chromis spilurus, Günth. Proc. Zool. Soc. 1894, p. 89, pl. x. fig. A, and 1896, p. 219.

Tilapia nilotica, Bouleng. Tr. Zool. Soc. xv. 1898, p. 6.

Teeth very small, in 4 to 6 series in both jaws. Depth of body $2\frac{1}{5}$ to $2\frac{1}{2}$ times in total length, length of head $2\frac{3}{5}$ to $3\frac{1}{4}$ times. Snout with nearly straight upper profile, $1\frac{1}{3}$ to $1\frac{1}{2}$ diameter of eye (shorter in the young), which is $4\frac{1}{2}$ to 6 times in length of head ($3\frac{1}{2}$ to $3\frac{2}{3}$ in the young), and $1\frac{1}{2}$ to $2\frac{1}{4}$ times in interorbital width; mouth moderate, $\frac{1}{2}$ to $\frac{2}{3}$ width of head, extending to below anterior border of eye or between the nostril and the eye; 2 or 3 series of scales on the cheek, forming, under the eye, a nearly straight horizontal band which equals or exceeds the width of the naked præopercle; large scales on the opercle. Gill-rakers short, 17 to 23 on lower part of anterior arch. Dorsal XV-XVIII 11-13; last spine longest, $\frac{2}{3}$ to $\frac{1}{2}$ length of head, $\frac{3}{5}$ to $\frac{2}{3}$ length of longest soft rays. Pectoral falciform, 1 to $1\frac{1}{4}$ length of head, extending as far as origin of anal or a little beyond. Ventral reaching vent or anal. Anal III 9-11; third spine as long as or a little shorter than longest dorsal spine. Caudal rounded. Caudal peduncle slightly deeper than long. Scales cycloid, 31-35 $\frac{4-5}{14-15}$; lat. l. $\frac{19-25}{13-15}$. Olive, some or most of the scales darker at the base, or lighter and golden in the centre; vertical fins with blackish and whitish spots forming transverse or oblique streaks; a blackish opercular spot; young with 8 or 9 more or less distinct dark bars

on the body and a dark spot just below the upper profile of the caudal peduncle.

Total length 350 millim.

Lake of Galilee and Jordan; Nile; Lakes Abaya, Rudolf, Albert Edward, and Victoria; Gallaland; Senegal; Niger.

6. *TILAPIA TANGANICÆ.*

Chromis tanganicæ, Günth. Proc. Zool. Soc. 1893, p. 630, fig.

Tilapia tanganicæ, Bouleng. Tr. Zool. Soc. xv. 1898, p. 5.

Teeth very small, in 5 or 6 series in both jaws. Depth of body $2\frac{1}{3}$ in total length, length of head $2\frac{1}{5}$. Snout with straight upper profile, slightly longer than diameter of eye, which is $3\frac{1}{2}$ times in length of head and $1\frac{2}{5}$ in interorbital width; mouth rather small, $\frac{2}{3}$ width of head, extending to below nostril; 3 series of scales on the cheek; large scales on the opercle. Gill-rakers short, slender, 20 or 21 on lower part of anterior arch. Dorsal XVI–XVII 11–13; spines equal in length from the sixth, measuring $\frac{2}{5}$ length of head and $\frac{3}{4}$ longest soft rays. Pectoral pointed, a little longer than head, extending beyond origin of anal. Ventral reaching vent. Anal III 9–10; third spine a little shorter than longest dorsals. Caudal truncate, slightly emarginate. Caudal peduncle as long as deep. Scales cycloid, 32–33 $\frac{4}{19-20}$; lat. l. $\frac{14-18}{8-12}$. Olive above, silvery beneath; soft dorsal with rather indistinct oblique dark streaks.

Total length 95 millim.

Lake Tanganyika.

7. *TILAPIA NATALENSIS.*

Chromis niloticus, part., Peters, Arch. f. Nat. 1855, p. 267, and Reise n. Mossamb. iv. p. 23 (1868); Pfeffer, Jahrb. Hamb. wiss. Anst. x. 1893, p. 149, pl. iii. figs. 1–4, and Thierw. O.-Afr., Fische, p. 10, fig. (1896).

Chromis mossambicus, part., Günth. Cat. iv. p. 268 (1862).

Chromis natalensis, M. Weber, Zool. Jahrb., Syst. x. 1897, p. 147.

Teeth very small, in 4 or 5 series in both jaws. Depth of body $2\frac{1}{4}$ to $2\frac{2}{3}$ times in total length, length of head 3 times. Snout with straight or slightly convex upper profile, $1\frac{1}{2}$ to $1\frac{3}{4}$ diameter of eye, which is 4 to $4\frac{2}{3}$ times in length of head and $1\frac{1}{2}$ to 2 in interorbital width; mouth moderate, $\frac{2}{3}$ to $\frac{2}{3}$ width of head; maxillary extending to between nostril and eye; 2 or 3 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 17 to 20 on lower part of anterior arch. Dorsal XVI–XVIII 10–12; last spine longest, $\frac{2}{5}$ to $\frac{1}{2}$ length of head, $\frac{1}{2}$ to $\frac{2}{3}$ longest soft rays. Pectoral pointed, as long as or a little longer ($1\frac{1}{5}$) than the head, extending to origin of anal. Ventral reaching vent or origin of anal. Anal III 9–11; third spine a little shorter but stronger than last dorsal spine. Caudal truncate or very slightly notched. Caudal peduncle as long as deep or a little longer than deep. Scales

cycloid, 31-34 $\frac{3\frac{1}{2}-4\frac{1}{2}}{14}$; lat. l. $\frac{19-21}{12-17}$. Brownish or olive, uniform or with darker spots at the bases of the scales; young with more or less distinct dark bars on the body, oblique streaks on the soft dorsal and anal, and two or three bars across the caudal; opercular spot usually very indistinct.

Total length 180 millim.

East and South-east Africa, from the coast of Zanzibar to Natal.

8. *TILAPIA GALILEA*.

Sparus galileus, Artedi, in Hasselq. Reise Palæst. p. 389 (1762).

Chromis ? galileus, Günth. Cat. iv. p. 273 (1859).

Chromis niloticus part., Günth. l. c. p. 267, and Proc. Zool. Soc. 1864, p. 490, and in Petherick, Trav. C. Afr. ii. p. 216 (1869); Steind. Sitz. Ak. Wien, lx. 1870, p. 964, pl. iv. fig. 1.

Chromis niloticus, Steind. Verh. zool.-bot. Ges. Wien, xiv. 1864, p. 226; Tristram, Faun. Palest. pl. xviii. fig. 1 (1884).

Chromis tiberiadis, Lortet, Ann. Mus. Lyon, iii. 1883, p. 135, pl. vi.

Chromis microstomus, Lortet, l. c. p. 139, pl. viii. fig. 1.

Teeth very small, in 4 to 6 series in both jaws. Depth of body 2 to $2\frac{1}{2}$ times in total length, length of head $2\frac{2}{3}$ to 3 times. Snout with straight or convex upper profile, $1\frac{1}{4}$ to $1\frac{2}{3}$ diameter of eye, which is 4 to 5 times in length of head and $1\frac{1}{2}$ to 2 in inter-orbital width; mouth narrow, not more than $\frac{1}{2}$ width of head, extending to below the nostril; 2 or 3 series of scales on the cheek, forming a narrow oblique band which in its widest part does not exceed the width of the naked præopercle; large scales on the opercle. Gill-rakers short, 20 to 25 on lower part of anterior arch. Dorsal XVI-XVII 12-14; last spine longest, $\frac{1}{2}$ to $\frac{2}{3}$ length of head, $\frac{2}{3}$ to $\frac{2}{3}$ longest soft rays. Pectoral falciform, $1\frac{1}{4}$ to $1\frac{2}{5}$ length of head, extending to origin of anal or beyond. Ventral reaching vent or origin of anal. Anal III 10-11; third spine as long as or a little shorter and stronger than last dorsal spine. Caudal truncate or slightly notched. Caudal peduncle deeper than long. Scales cycloid, 31-34 $\frac{3\frac{1}{2}}{14-15}$; lat. l. $\frac{19-22}{12-14}$. Brownish or olive, without spots or bars; a more or less distinct dark opercular spot; vertical fins greyish or brown, without markings.

Total length 300 millim.

Lake of Galilee and Jordan, Nile, Senegal, Niger.

9. *TILAPIA MICROCEPHALA*.

Chromis microcephalus (Bleek.), Günth. Cat. iv. p. 272 (1862).

Melanogenes microcephalus, Bleek. Nat. Verh. Vet. Haarlem, xviii. 1863, no. 2, p. 37, pl. vi. fig. 1.

Teeth very small, closely set, in 4 or 5 series in both jaws. Depth of body 2 to $2\frac{1}{5}$ times in total length, length of head $2\frac{1}{5}$ to 3 times. Snout with straight or convex upper profile, $1\frac{1}{4}$ to $1\frac{1}{2}$ diameter of eye, which is $3\frac{2}{3}$ to 4 times in length of head and $1\frac{1}{3}$

to $1\frac{1}{2}$ in interorbital width; mouth narrow, $\frac{1}{2}$ to $\frac{3}{5}$ width of head, extending to between nostril and eye; 2 series of scales on the cheek, forming a narrow oblique band; large scales on the opercle. Gill-rakers short, 15 to 19 on lower part of anterior arch. Dorsal XV–XVI 11–13; last spine longest, $\frac{1}{2}$ or a little less than $\frac{1}{2}$ length of head, $\frac{3}{5}$ to $\frac{2}{3}$ longest soft rays. Pectoral falciform, $1\frac{1}{4}$ to $1\frac{1}{3}$ length of head, extending to origin of anal or beyond. Ventral reaching vent or anal. Anal III 9–11; third spine shorter than last dorsal. Caudal truncate, slightly emarginate. Caudal peduncle deeper than long. Scales cycloid, 28–30 $\frac{2\frac{1}{2}-3}{11-12}$; lat. l. $\frac{17-21}{11-13}$. Olive above, golden beneath, uniform or with 5 or 6 very indistinct, narrow, dark bars; soft dorsal with dark and light spots forming oblique streaks; a dark opercular spot.

Total length 175 millim.

Gold Coast.

10. *TILAPIA MACROCEPHALA*.

Sarotherodon melanotheron (nom. nud.), Rüpp. Verz. Mus. Senck. iv. p. 21 (1852); Günth. Cat. iv. p. 273 (1862).

Chromis macrocephalus (Bleek.), Günth. l. c.

Melanogenes macrocephalus, Bleek. Nat. Verh. Vet. Haarlem, xviii. 1863, no. 2, p. 36, pl. vi. fig. 2.

Teeth very small, closely set, in 4 to 6 series in both jaws. Depth of body $2\frac{1}{3}$ to $2\frac{2}{5}$ times in total length, length of head $2\frac{2}{5}$ to $2\frac{3}{5}$ times. Snout with straight or convex upper profile, $1\frac{1}{3}$ to $1\frac{1}{2}$ diameter of eye, which is 4 to $4\frac{1}{2}$ times in length of head and $1\frac{1}{2}$ to $1\frac{2}{3}$ in interorbital width; mouth moderate, about $\frac{2}{5}$ width of head, extending to between nostril and eye; 2 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 15 to 17 on lower part of anterior arch. Dorsal XV–XVI 10–12; last spine longest, $\frac{2}{5}$ length of head, $\frac{1}{2}$ longest soft rays, which are somewhat produced. Pectoral falciform, $1\frac{1}{5}$ to $1\frac{1}{4}$ length of head, extending to origin of anal or beyond. Ventral reaching origin of anal. Anal III 7–9; third spine a little shorter than last dorsal. Caudal truncate, slightly emarginate. Caudal peduncle deeper than long. Scales cycloid, 28–30 $\frac{2\frac{1}{2}-3}{11-12}$; lat. l. $\frac{19}{16-13}$. Olive-brown above, golden beneath; indistinct light spots on the soft dorsal and caudal fins, forming oblique streaks on the former; a black opercular spot; chin and gular region black, or marbled with black.

Total length 145 millim.

Gold Coast.

11. *TILAPIA NIGRIPINNIS*.

Tilapia nigripinnis (Guichen.), A. Dum. Arch. Mus. x. 1859, p. 254, pl. xxii. fig. 2.

Chromis nigripinnis, Günth. Cat. iv. p. 270 (1862).

Teeth very small, in 4 or 5 closely-set series in both jaws.

Depth of body $2\frac{1}{4}$ in total length, length of head 3 times. Snout with slightly concave upper profile, $1\frac{1}{4}$ diameter of eye, which is $3\frac{1}{2}$ in length of head and $1\frac{1}{3}$ in interorbital width; mouth small, $\frac{2}{3}$ width of head, maxillary extending little beyond vertical of nostril; 2 series of scales on the cheek, forming a narrow oblique band; large scales on the opercle. Gill-rakers short, 16 on lower part of anterior arch. Dorsal XVI 10; spines nearly equal in length from the 6th, which measures $\frac{2}{5}$ length of head and $\frac{2}{3}$ longest soft rays. Pectoral pointed, a little longer than the head, extending to origin of anal. Ventral reaching vent. Anal III 8-9. Caudal truncate, slightly emarginate. Caudal peduncle a little deeper than long. Scales cycloid, $29\frac{2\frac{1}{2}-3}{12}$; lat. l. $\frac{18}{10}$. Brown; indistinct darker oblique streaks on the soft dorsal.

Total length 115 millim.

Gaboon.

12. *TILAPIA DUMERILI*.

Chromis dumerilii, Steind. Verh. zool.-bot. Ges. Wien, xiv. 1864, p. 225, pl. vii. fig. 1.

Teeth small, in 4 series in both jaws. Depth of body equal to length of head, $2\frac{1}{2}$ to $2\frac{3}{5}$ in total length. Snout with straight upper profile, nearly $1\frac{1}{2}$ diameter of eye, which is about $4\frac{1}{2}$ in length of head; mouth rather large; maxillary extending to below anterior border of eye; 2 series of scales on the cheek. Dorsal XV 10; last spine longest, nearly $\frac{2}{5}$ length of head, $\frac{3}{5}$ longest soft rays. Pectoral pointed, a little longer than the head, extending beyond origin of anal. Ventral reaching origin of anal. Anal III 9. Caudal truncate, scaly in the basal half. Caudal peduncle a little deeper than long. Scales cycloid, $30-31\frac{3-3\frac{1}{2}}{10}$; lat. l. $\frac{18}{14}$. Brown, each scale darker at the base; a very narrow blackish opercular spot.

Total length 133 millim.

West Africa.

Apparently nearly allied to *T. macrocephala*, but distinguished by a larger mouth.

13. *TILAPIA LEPIDURA*, sp. n.

Teeth very minute, in 4 closely-set series in both jaws. Depth of body $2\frac{2}{5}$ to $2\frac{1}{2}$ times in total length, length of head $2\frac{3}{4}$ to 3. Snout with convex upper profile, $1\frac{1}{3}$ to $1\frac{1}{2}$ diameter of eye, which is $3\frac{2}{3}$ to 4 times in length of head and $1\frac{1}{2}$ to 2 in interorbital width; mouth moderate, $\frac{2}{3}$ width of head, extending to between nostril and eye; 2 or 3 series of scales on the cheek; large scales on the opercle. Gill-rakers short, slender, 17 to 20 on lower part of anterior arch. Dorsal XVI 10; last spine longest, $\frac{2}{5}$ length of head. Pectoral pointed, as long as head, extending as far as origin of anal. Ventral reaching vent. Anal III 8-9; third spine a little shorter than last dorsal. Caudal rounded, densely scaled. Caudal peduncle

deeper than long. Scales cycloid, 29-30 $\frac{3-3\frac{1}{2}}{13}$; lat. l. $\frac{17-20}{11-13}$. Brownish above, golden beneath; a blackish opercular spot; dorsal and anal with blackish spots forming oblique streaks on the soft part of the dorsal; caudal with a wide-meshed dark network.

Total length 160 millim.

Lower Congo and Angola.

14. *TILAPIA SQUAMIPINNIS*.

Chromis squamipinnis, Günth. Proc. Zool. Soc. 1864, p. 311, and 1893, p. 621, pl. liii.

Tilapia squamipinnis, Bouleng. Tr. Zool. Soc. xv. 1898, p. 4.

Teeth small, in 4 or 5 closely-set series in both jaws. Depth of body $2\frac{1}{2}$ to $2\frac{2}{3}$ in total length, length of head $2\frac{3}{4}$ to 3 times. Snout with straight or slightly convex upper profile, $1\frac{1}{3}$ to $1\frac{1}{2}$ diameter of eye (as long as eye in the young), which is 4 times in length of head (3 to $3\frac{1}{2}$ times in the young), and twice in interorbital width ($1\frac{1}{3}$ to $1\frac{1}{2}$ in the young); mouth narrow, $\frac{1}{2}$ to $\frac{3}{5}$ width of head; maxillary extending to between nostril and eye; 2 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 17 to 19 on lower part of anterior arch. Dorsal XVI 10-11; spines subequal from the middle ones, $\frac{1}{3}$ to $\frac{1}{2}$ length of head, about $\frac{3}{4}$ longest soft rays. Pectoral pointed, as long as or a little longer than the head, reaching origin of anal or a little beyond. Ventral reaching vent. Anal III 8-9; third spine nearly as long as longest dorsals. Caudal slightly notched, upper angle pointed, lower rounded and shorter. Caudal peduncle a little longer than deep. Scales cycloid, 32-35 $\frac{3\frac{1}{2}}{15-16}$; lat. l. $\frac{21-22}{13-17}$. Pale greyish olive, with 8 more or less regular blackish cross-bars; oblique dark streaks on the soft dorsal and a large dark spot between the anterior rays.

Total length 250 millim.

Lake Nyassa and Upper Shiré River.

15. *TILAPIA MACROCENTRA*.

Tilapia macrocentra, A. Dum. Arch. Mus. x. 1859, p. 256.

Chromis macrocentra, Rochebr. Actes Soc. Linn. Bord. (4) vi. 1883, p. 133.

Depth of body $2\frac{1}{5}$ in total length. 3 series of scales on the cheek. 22 gill-rakers on lower part of anterior arch. Dorsal XIV 13, the spines remarkably strong and triangular. Anal III 10. Caudal rounded. Scales very large, cycloid, 26 in the lateral series. Uniform brown.

Total length 260 millim.

Senegal.

I am indebted to the kindness of Prof. Vaillant for some notes on the gill-rakers, scales, and shape of the caudal in this and the other species so imperfectly described by Aug. Duméril.

16. *TILAPIA PLEUROMELAS*.

Tilapia pleuromelas, A. Dum. Arch. Mus. x. 1859, p. 253.

Tilapia lateralis, A. Dum. l. c.

Chromis pleuromelas, Günth. Cat. iv. p. 271 (1862).

Chromis lateralis, Günth. t. c. p. 272.

Depth of body about twice in total length. 2 series of scales on the cheek. 15-17 gill-rakers on lower part of anterior arch. Dorsal XIV 12-14. Anal III 10. Caudal rounded. Scales cycloid, $26-29 \frac{3\frac{1}{2}-4}{x}$. Brown; a large black blotch on each side of the body.

Total length 200 millim.

Senegal.

17. *TILAPIA HEUDELOTI*.

Tilapia heudelotii, A. Dum. Arch. Mus. x. 1859, p. 254.

Chromis heudelotii, Günth. Cat. iv. p. 270 (1862).

Depth of body a little more than twice in total length. 3 series of scales on the cheek. 16 gill-rakers on lower part of anterior arch. Dorsal XIV 10. Anal III 7. Caudal rounded (?). Scales cycloid, $27 \frac{3\frac{1}{2}}{x}$. Brownish; soft dorsal with irregular light and dark streaks.

Total length 120 millim.

Senegal.

18. *TILAPIA SPARRMANI*.

Tilapia sparrmanii, Smith, Ill. Zool. S. Afr., Fish. pl. v. (1840).

Chromis sparrmanni, Günth. Cat. iv. p. 269 (1862).

Chromis niloticus, part., Peters, Reise n. Mossamb. iv. p. 23 (1868).

Teeth very small, in 3 to 5 series in both jaws. Depth of body $2\frac{1}{4}$ to $2\frac{3}{5}$ times in total length, length of head 3 to $3\frac{1}{4}$. Snout with straight or slightly convex upper profile, as long as the eye, which is $3\frac{1}{2}$ to 4 times in length of head and $1\frac{1}{4}$ to $1\frac{3}{5}$ in inter-orbital width; mouth moderate, $\frac{2}{3}$ width of head; maxillary extending to below anterior border of eye; 2 series of scales on the cheek; large scales on the opercle. Gill-rakers very short, 10 to 12 on lower part of anterior arch. Dorsal XIII-XV 9-11; last spine longest, $\frac{2}{3}$ to $\frac{1}{2}$ length of head, $\frac{1}{2}$ to $\frac{2}{3}$ longest soft rays. Pectoral pointed, a little shorter than the head, not extending to origin of anal. Ventral reaching origin of anal. Anal III 9; third spine a little shorter but stronger than last dorsal spine. Caudal rounded. Caudal peduncle as long as deep. Scales cycloid, $27-29 \frac{2\frac{1}{2}-3}{9-10}$; lat. l. $\frac{17-19}{8-12}$. Pinkish to brownish, with 7 or 8 rather indistinct dark brown or olive bars; vertical fins with some small dark spots; a large blackish spot on the dorsal, between the anterior soft rays; a dark opercular spot.

Total length 145 millim.

South-west Africa, from Angola and the Victoria Falls to Namaqualand.

19. *TILAPIA OVALIS*.

Chromis ovalis, Steind. Verh. zool.-bot. Ges. Wien, xvi. 1866, p. 761.

Allied to *T. zillii*. Depth of body equal to length of head, 3 times in total length. Snout with straight upper profile; diameter of eye 4 times in length of head, a little less than interorbital width; maxillary extending a little beyond vertical of anterior border of eye; 3 series of scales on the cheek. Dorsal XIV 11; last spine longest; middle soft rays produced. Pectoral shorter than the head. Ventral extending a little beyond origin of anal. Anal III 8. Caudal rounded. Scales $29\frac{3}{10}$; lat. l. $\frac{19}{12}$. Olive-brown, with indistinct darker bars; a black opercular spot; dorsal and anal with black streaks; a black spot on the anterior soft rays of the dorsal.

Total length 100 millim.

Angola.

20. *TILAPIA MENZALENSIS*.

Chromis menzaleensis, Mitchell, Rep. Fish. L. Menzaleh, p. 13, pl. iii. (1895).

Teeth in 4 or 5 series in both jaws, outer rather large. Depth of body $2\frac{2}{5}$ in total length, length of head 3 times. Snout with straight or slightly concave upper profile, $1\frac{1}{3}$ to 2 diameter of eye, which is 4 to 5 times in length of head and $1\frac{1}{3}$ to 2 in interorbital width; mouth large, $\frac{3}{4}$ to $\frac{4}{5}$ width of head; maxillary extending to below anterior border of eye; 3 or 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 9 or 10 on lower part of anterior arch. Dorsal XV 12-13; last spine longest, $\frac{2}{5}$ to $\frac{1}{2}$ length of head; middle soft rays produced in adult specimens, about twice as long as last spine. Pectoral pointed, as long as the head or a little shorter, not extending to origin of anal. Ventral produced in the adult, reaching anal. Anal III 8-9; third spine shorter than longest dorsal, soft rays produced like the dorsals. Caudal truncate, rounded in old specimens. Caudal peduncle as long as deep. Scales cycloid, 30-31 $\frac{3}{12}$; lat. l. $\frac{20-21}{11-14}$. Olive, with 7 or 8 dark bars, sometimes with a dark stripe along the middle of the side; ventrals and vertical fins dark, the latter sometimes with ill-defined lighter spots; a more or less distinct round black spot between the anterior soft rays of the dorsal; a black opercular spot.

Total length 235 millim.

Lake Menzaleh, Lower Egypt.

21. *TILAPIA ZILLII*.

Acerina zillii, Gervais, Ann. Sc. Nat. (3) x. 1848, p. 203.

Coptodon zillii, Gervais, Bull. Soc. Agric. Hérault, 1853, p. 80, pl. iv. figs. 5-7; A. Dum. Arch. Mus. x. 1859, p. 252.

Glyphisodon zillii, Valenciennes, C.R. Ac. Sc. xlv. 1858, p. 713.

Haligenes tristrami, Günth. Proc. Zool. Soc. 1859, p. 471, pl. ix. fig. B.

Chromis tristrami, part., Günth. Cat. iv. p. 269 (1862).

Sarotherodon (?) *zillii*, Günth. Cat. iv. p. 274.

Chromis andree, Günth. Proc. Zool. Soc. 1864, p. 492; Lortet, Ann. Mus. Lyon, iii. 1883, p. 142, pl. viii. fig. 3; Tristram, Faun. Palest. pl. xvii. fig. 1 (1884).

Chromis niloticus, part., Gervais, Zool. Pal. Gén. p. 205, pl. xlv. fig. 3 (1869), and Journ. Zool. iii. 1874, p. 455.

Chromis mossambicus, part., Steind. Sitzb. Ak. Wien, lx. i. 1870, p. 23.

Chromis zillii, Sauvage, Bull. Soc. Philom. (7) i. 1877, p. 163; Rolland, Rev. Scientif. (4) ii. 1894, p. 418. fig.

Chromis tristrami, Günth. Proc. Zool. Soc. 1896, p. 218.

Tilapia tristrami, Bouleng. Tr. Zool. Soc. xv. 1898, p. 6.

Teeth in 3 or 4 series in both jaws, outer rather large. Depth of body $2\frac{1}{2}$ to $2\frac{2}{3}$ in total length, length of head $2\frac{3}{4}$ to $3\frac{1}{4}$ times. Snout with straight upper profile, $1\frac{1}{4}$ to $1\frac{2}{3}$ diameter of eye, which is $3\frac{1}{2}$ to $4\frac{1}{2}$ in length of head and 1 to $1\frac{1}{2}$ in interorbital width; mouth moderate, $\frac{2}{5}$ to $\frac{3}{5}$ width of head; maxillary extending to below anterior border of eye; 3 or 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 8 to 10 on lower part of anterior arch. Dorsal XIV–XV 10–13; last spine longest, $\frac{2}{5}$ to $\frac{1}{2}$ length of head; middle soft rays produced in adult specimens, about twice as long as last spine. Pectoral pointed, as long as the head or a little shorter, not extending to origin of anal. Ventral produced in the adult, reaching vent or anal. Anal III 7–9; third spine as long as or a little shorter than longest dorsal, soft rays produced like the dorsals. Caudal truncate. Caudal peduncle as long as deep. Scales mostly cycloid, 30–32 $\frac{3}{11-12}$; lat. l. $\frac{17-21}{12-15}$. Olive, with 6 to 8 more or less distinct darker bars, sometimes with a dark stripe along the middle of the side; vertical fins usually with more or less distinct lighter round spots; a large round blackish spot usually present between the anterior soft rays of the dorsal; a dark opercular spot.

Total length 210 millim.

Algerian Sahara to Lake Rudolf and the Lake of Galilee¹.

Chromis faidherbi, Rochebr. Bull. Soc. Philom. (7) iv. 1880, p. 167, and Act. Soc. Linn. Bord. (4) vi. 1883, p. 134, pl. v. fig. 5, from the Senegal, appears to be allied to *C. zillii*, but the description is insufficient and contradicted by the accompanying figure.

D. XIV 11; A. III 7; Sq. $27\frac{3}{5}$. 3 dark bars on the body.

22. TILAPIA MAGDALENÆ.

Chromis magdalene, Lortet, Arch. Mus. Lyon, iii. 1883, p. 146, pl. ix. fig. 2.

¹ I have not seen Egyptian specimens; but, according to Panceri (Rend. Acc. Sc., Soc. R. Nap. xii. 1873, p. 113), the species has been found in the artesian wells of the oases of the Libyan Desert by Figari Bey (Stud. sc. sull' Egitto, 1864, i. p. 287).

Teeth very small, in 3 or 4 rows in both jaws. Depth of body $2\frac{2}{5}$ to $2\frac{3}{4}$ in total length, length of head $2\frac{2}{3}$ to 3 times. Snout with straight or humped upper profile, $1\frac{1}{2}$ to 2 as long as the diameter of the eye, which is $4\frac{1}{2}$ to 6 times in length of head and $1\frac{1}{3}$ to $1\frac{3}{4}$ in interorbital width; mouth moderate, $\frac{3}{5}$ to $\frac{2}{3}$ width of head; maxillary extending to between nostril and eye; 3 or 4 series of scales on the cheek. Gill-rakers short, 10 on lower part of anterior arch. Dorsal XIV-XV 9-10; last spine longest, $\frac{1}{3}$ to $\frac{2}{5}$ length of head, $\frac{3}{5}$ to $\frac{3}{4}$ longest soft rays. Pectoral pointed, a little shorter than the head, not extending to origin of anal. Ventral not reaching vent. Anal III 7-8; third spine as long as or a little shorter than last dorsal. Caudal rounded. Caudal peduncle as long as deep or slightly longer than deep. Scales cycloid, 30-32 $\frac{3-3\frac{1}{2}}{15-17}$; lat. 1. $\frac{18-21}{11-12}$. Brownish green above, bluish silvery below; 8 oblique dark bars on the body, sometimes very indistinct; fins uniform bluish white; a dark bar below the eye; a black opercular spot.

Total length 160 millim.

Syria.

23. *TILAPIA THOLLONI*.

Chronis tholloni, Sauvage, Bull. Soc. Zool. France, 1884, p. 196, pl. v. fig. 1.

Teeth very small. Depth of body $2\frac{2}{5}$ in total length, length of head 3 times. Snout with slightly concave upper profile, $1\frac{1}{2}$ diameter of eye, which is 4 times in length of head; interorbital space a little wider than diameter of eye; maxillary not quite reaching to below anterior border of eye; 4 series of scales on the cheek. Dorsal XVI 8; last spine longest, about $\frac{1}{2}$ length of longest soft rays. Pectoral obtuse, nearly as long as the head, not extending to origin of anal. Ventral extending beyond origin of anal. Anal III 9. Caudal rounded. Caudal peduncle nearly as long as deep. Scales cycloid, $32\frac{3}{10}$. Olive; a black opercular spot and a blackish lateral stripe; soft dorsal and caudal with purplish spots.

Total length 180 millim.

Upper Owowe.

24. *TILAPIA CABRÆ*.

Tilapia cabræ, Bouleng. Ann. Mus. Congo, Zool. i. 1899, p. 51, pl. xxvii.

Teeth in outer row moderate, separated by an interspace from a band of 4 transverse series of smaller closely-set teeth. Depth of body 2 to $2\frac{1}{5}$ in total length, length of head 3 times. Snout with straight upper profile, $1\frac{1}{2}$ to $1\frac{2}{3}$ diameter of eye, which is 4 to $4\frac{1}{2}$ times in length of head and $1\frac{1}{2}$ to 2 in interorbital width; mouth $\frac{2}{3}$ width of head, extending to between nostril and eye; 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 10 to 12 on lower part of anterior arch. Dorsal XVI 12-13; last spine longest, $\frac{2}{5}$ to $\frac{1}{2}$ length of head, $\frac{2}{5}$ to $\frac{2}{7}$

middle soft rays, which are much produced. Pectoral pointed, as long as head, not extending to origin of anal. Ventral reaching vent or origin of anal. Anal III 10-11; third spine shorter than last dorsal; soft rays produced like the dorsals. Caudal rounded. Caudal peduncle deeper than long. Scales cycloid, $32\frac{3-3\frac{1}{2}}{11-13}$; lat. l. $\frac{20-21}{12-14}$. Olive-brown; a black opercular spot; soft dorsal and caudal with numerous small round blackish spots.

Total length 340 millim.

Loango.

25. *TILAPIA MARIE*, sp. n. (Plate XI. fig. 1.)

Teeth small, in 3 series in both jaws. Depth of body 2 to $2\frac{2}{5}$ in total length, length of head $2\frac{3}{4}$ to 3 times. Snout with straight upper profile, as long as diameter of eye, which is 3 times in length of head and $1\frac{1}{4}$ to $1\frac{1}{3}$ in interorbital width; mouth rather small, $\frac{2}{5}$ width of head; maxillary extending to between nostril and eye; 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 13 on lower part of anterior arch. Dorsal XVI 12; spines equal in length from the 5th, $\frac{1}{2}$ length of head. Pectoral pointed, as long as head, not extending to origin of anal. Ventral produced into a filament, reaching origin of anal. Anal III 10; third spine nearly as long as longest dorsals. Caudal truncate. Caudal peduncle a little deeper than long. Scales cycloid, $30-31\frac{3\frac{1}{2}}{12}$; lat. l. $\frac{21}{14-15}$. Pale brown, with 7 or 8 dark bars, five of which extend on the dorsal.

Total length 80 millim.

Azuminé Creek, Opobo River, Niger Delta. Two specimens, collected by Miss Mary Kingsley.

26. *TILAPIA HORII*.

Chromis horii, Günth. Proc. Zool. Soc. 1893, p. 630, pl. lviii. fig. A.

Tilapia horii, Bouleng. Tr. Zool. Soc. xv. 1898, p. 5.

Teeth very small, in 4 or 5 series in both jaws. Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head $2\frac{3}{4}$ to $2\frac{1}{2}$. Snout with straight upper profile, $1\frac{1}{2}$ to $1\frac{2}{3}$ diameter of eye, which is contained 4 times in length of head and a little exceeds interorbital width; mouth moderate, $\frac{2}{3}$ width of head, extending to between nostril and eye; 3 series of scales on the cheek. Gill-rakers short, 13 on lower part of anterior arch. Dorsal XVI 8-9; spines equal from the 5th or 6th, $\frac{1}{3}$ to $\frac{2}{5}$ length of head, $\frac{2}{3}$ to $\frac{2}{3}$ longest soft rays. Pectoral pointed, $\frac{2}{3}$ length of head, not extending to origin of anal. Ventral reaching vent or origin of anal. Anal III 6-7; third spine slightly shorter than longest dorsals. Caudal rounded, subtruncate. Caudal peduncle a little longer than deep. Scales cycloid, $30-31\frac{3-4}{11-12}$; lat. l. $\frac{19-21}{11-14}$. Pale olive above, with 7 or 8 very indistinct darker bars; large irregular brown spots may be

present on the snout and cheeks; a round white spot may be present between the last two anal rays.

Total length 125 millim.

Lake Tanganyika.

27. *TILAPIA MELANOPLEURA*.

Tilapia melanopleura, A. Dum. Arch. Mus. x. 1859, p. 252, pl. xxii. fig. 1.

Chromis melanopleura, Günth. Cat. iv. p. 272 (1862).

Depth of body 2 in total length, length of head 3 times. Snout with slightly concave upper profile, $1\frac{1}{2}$ diameter of eye, which is 4 times in length of head; maxillary extending to below anterior border of eye; 5 series of scales on the cheek; large scales on the opercle. 10 gill-rakers on lower part of anterior arch. Dorsal XV 12; last spine longest, $\frac{1}{2}$ length of head, not quite $\frac{1}{2}$ longest soft rays. Pectoral pointed, as long as the head, not extending to origin of anal. Anal III 9; third spine nearly as long as last dorsal. Caudal truncate. Caudal peduncle a little deeper than long. Scales cycloid, 25-26 $\frac{4}{x}$. Brown; a large black blotch on each side of the body.

Total length 150 millim.

Senegal.

28. *TILAPIA CÆRULEOMACULATA*.

Chromis cæruleomaculatus, Rochebr. Bull. Soc. Philom. (7) iv. 1880, p. 166, and Act. Soc. Linn. Bord. (4) vi. 1883, p. 132, pl. iv. fig. 3.

Depth of body $2\frac{1}{3}$ in total length, length of head 3 times. Snout longer than eye, which is $3\frac{1}{4}$ times in length of head; 5 series of scales on the cheek. Dorsal XIV 11; spines subequal from the fifth. Pectoral rather short, not extending so far as origin of anal. Anal III 10. Caudal truncate, slightly emarginate. Scales $29\frac{4}{13}$. Dark green above, pink beneath; a series of 5 large, round, deep blue spots along each side, the first on the opercle.

Total length 137 millim.

Senegal.

29. *TILAPIA JALLÆ*.

Chromis jallæ, Bouleng. Boll. Mus. Torin. xi. 1896, no. 260.

Teeth small. Depth of body $3\frac{1}{2}$ in total length, length of head $3\frac{1}{4}$ times. Snout a little longer than diameter of eye, which is $3\frac{1}{2}$ times in length of head and equals $1\frac{1}{2}$ interorbital width; maxillary not extending to below anterior border of eye; 6 or 7 series of scales on the cheek; large scales on the opercle. Gill-rakers very short, 9 on lower part of anterior arch. Dorsal XV 10; spines subequal from the 5th, which measures $\frac{1}{3}$ length of head; last soft rays prolonged into filaments. Pectoral $\frac{2}{3}$ length of head. Anal III 8; third spine as long as longest dorsal; soft

rays produced like the dorsals. Caudal truncate. Caudal peduncle $1\frac{1}{2}$ as long as deep. Scales cycloid, $33\frac{3}{8}$; lat. l. $\frac{21}{13}$. Olive-brown, with traces of 5 darker bars.

Total length 75 millim.

Upper Zambesi (district of the Victoria Falls).

30. *TILAPIA HUMILIS*.

Chromis humilis, Steind. Verh. zool.-bot. Ges. Wien, xvi. 1866, p. 763.

Depth of body $3\frac{3}{5}$ in total length, length of head $3\frac{1}{5}$ times. Snout with straight upper profile; diameter of eye $4\frac{2}{5}$ times in length of head, equal to interorbital width; maxillary not reaching to below anterior border of eye; 6 or 7 series of scales on the cheek. Dorsal XV 10; last spine longest, about $\frac{1}{3}$ length of head; longest soft rays not quite $\frac{1}{2}$ length of head. Pectoral $\frac{3}{5}$ length of head. Anal III 8. Caudal rounded. Scales $30\frac{5}{12}$; lat. l. $\frac{21}{14}$. Yellowish brown; a black opercular spot; dorsal and caudal with round blackish spots.

Total length 115 millim.

Angola.

31. *TILAPIA GUINEENSIS*.

Chromis guineensis (Bleek.), Günth. Cat. iv. pp. 271 & 510 (1862).

Chromis tristrami, part., Günth. t. c. p. 269.

Haligenes guineensis, Bleek. Nat. Verh. Vet. Haarlem, xviii. 1863, no. 2, p. 41, pl. vii.

Teeth small, in 4 series in both jaws. Depth of body $2\frac{1}{3}$ to $2\frac{3}{4}$ in total length, length of head $3\frac{1}{4}$ to $3\frac{1}{3}$ times. Snout deep, with very steep upper profile, measuring about $1\frac{1}{2}$ diameter of eye, which is 4 times in length of head and $1\frac{1}{3}$ in interorbital width; mouth large, $\frac{3}{4}$ width of head; maxillary extending to below anterior border of eye; 4 series of scales on the cheek, forming an oblique band the width of which at least equals the diameter of the eye; large scales on the opercle. Gill-rakers short, 12 on lower part of anterior arch. Dorsal XV-XVI 11-12; last spine longest, $\frac{2}{3}$ to $\frac{3}{5}$ length of head; middle soft rays much produced, nearly 3 times as long as last dorsal spine. Pectoral pointed, a little longer than the head, not extending to origin of anal. Ventral produced, reaching beyond origin of anal. Anal III 9; third spine shorter than longest dorsal, soft rays produced like the dorsals. Caudal feebly emarginate, the outer rays somewhat produced. Caudal peduncle as long as deep. Scales cycloid, $31\frac{3}{11}$; lat. l. $\frac{22}{12-14}$. Dark olive; vertical fins with some light spots, confluent into two or three streaks on the dorsal; a black opercular spot.

Total length 190 millim.

Ashantee.

32. *TILAPIA VORAX*.

Chromis vorax, Pfeffer, Jahrb. Hamb. wiss. Anst. x. 1893, p. 151, pl. ii. figs. 9–11, and Thierw. O.-Afr., Fische, p. 12, fig. (1896).

Teeth very small, in 3 or 4 series in both jaws. Depth of body nearly equal to length of head, $2\frac{1}{4}$ to $2\frac{3}{4}$ times in total length. Snout with convex upper profile, $1\frac{1}{2}$ to $1\frac{2}{3}$ diameter of eye, which is 5 times in length of head and nearly twice in interorbital width; mouth large; maxillary extending to below anterior border of eye or a little beyond; 3 series of scales on the cheek; large scales on the opercle. Dorsal XV 12–13; middle soft rays much produced, as long as head. Pectoral pointed, nearly as long as head, extending a little beyond origin of anal. Ventral extending beyond origin of anal. Anal III 10; soft rays prolonged like the dorsals. Caudal peduncle as long as deep. Scales cycloid, 28–31 $\frac{4}{12}$; lat. l. $\frac{21}{13}$. Dark-olive brown; a rather indistinct dark opercular spot; vertical fins blackish.

Total length 149 millim.

German East Africa and Mozambique.

33. *TILAPIA SIMONIS*.

Chromis simonis, Günth. Proc. Zool. Soc. 1864, p. 492; Lortet, Arch. Mus. Lyon, iii. 1883, p. 143, pl. ix. fig. 1; Tristram, Faun. Palest. p. 165, pl. xvii. fig. 2 (1884).

Chromis paterfamilias, Lortet, C.R. Ac. Sc. lxxxi. 1875, p. 1197, and La Nature, 1876, p. 81, figs.

Teeth very small, in 4 or 5 series in both jaws. Depth of body equal to length of head, $2\frac{3}{5}$ to $2\frac{2}{3}$ times in total length. Snout with straight upper profile, $1\frac{1}{3}$ to $1\frac{1}{2}$ diameter of eye, which is $4\frac{1}{2}$ to 5 times in length of head and $1\frac{1}{2}$ in interorbital width; mouth moderate, $\frac{2}{3}$ width of head; maxillary extending to between nostril and eye; 3 or 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short and thick, 10 to 12 on lower part of anterior arch. Dorsal XV 9–10; last spine longest, $\frac{1}{3}$ to $\frac{2}{3}$ length of head, $\frac{3}{5}$ to $\frac{2}{3}$ longest soft rays. Pectoral pointed, as long as the head, extending as far as origin of anal. Ventral not reaching vent. Anal III 8–9; third spine a little shorter than last dorsal. Caudal rounded. Caudal peduncle as long as deep. Scales cycloid, 30–32 $\frac{3\frac{1}{2}}{15}$; lat. l. $\frac{18-20}{11-12}$. Olive, with 6 or 7 rather indistinct darker bars; opercular spot feebly marked; a rather indistinct dark spot between the anterior soft rays of the dorsal.

Total length 180 millim.

Syria (Lakes of Galilee and Huleh).

34. *TILAPIA LATA*.

Chromis latus, Günth. Cat. iv. p. 271 (1862); Steind. Verh. zool.-bot. Ges. Wien, xiv. 1864, p. 227, pl. viii. figs. 1 & 2.

Chromis niloticus, part., Steind. Sitzb. Ak. Wien, lx. 1870, p. 96.

Chromis microcephalus (non Bleek.), Sauvage, Bull. Soc. Zool. France, 1884, p. 196, fig.

Chromis ogowensis, Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 271.

Teeth small, in 3 to 5 well separated series in both jaws. Depth of body 2 to $2\frac{1}{2}$ in total length, length of head 3 to $3\frac{1}{4}$ times. Snout with straight or convex upper profile, $1\frac{1}{4}$ to $1\frac{1}{2}$ diameter of eye, which is $3\frac{2}{3}$ to 4 times in length of head and $1\frac{1}{4}$ to $1\frac{1}{2}$ in interorbital width; mouth $\frac{2}{3}$ to $\frac{3}{4}$ width of head; maxillary extending to between nostril and eye; 3 or 4 series of scales on the cheek; large scales on the opercle. Gill-rakers very short, 10 to 12 on lower part of anterior arch. Dorsal XV–XVI 10–14; last spine longest, nearly $\frac{1}{2}$ length of head, $\frac{2}{3}$ to $\frac{1}{2}$ middle soft rays, which are produced in the adult. Pectoral as long as or a little longer than the head, extending as far or nearly as far as origin of anal. Outer ventral ray produced, reaching origin of anal or beyond. Anal III 9–10; third spine shorter than last dorsal. Caudal truncate or slightly emarginate. Caudal peduncle a little deeper than long. Scales cycloid, 29–31 $\frac{2\frac{1}{2}-3\frac{1}{2}}{11-13}$; lat. l. $\frac{19-22}{11-16}$. Olive-brown, with or without 4 or 5 very indistinct darker bars; a black temporal spot; dorsal fin with blackish streaks and a large black spot between the anterior soft rays, the streaks behind the spot very oblique.

Total length 175 millim.

West Africa, from the Gambia to the Loango.

35. TILAPIA RANGII.

Tilapia rangii, A. Dum. Arch. Mus. x. 1859, p. 255.

Chromis rangii, Rochebr. Actes Soc. Linn. Bord. (4) vi. 1883, p. 133.

Depth of body $2\frac{2}{3}$ in total length. 3 series of scales on the cheek. 14 gill-rakers on lower part of anterior arch. Dorsal XV 10. Anal III 8. Pectoral extending beyond origin of anal. Caudal truncate. Scales cycloid, $26\frac{3\frac{1}{2}}{x}$. A black opercular spot; small blackish spots on the soft dorsal.

Total length 100 millim.

Gorea.

36. TILAPIA RENDALLI.

Chromis rendalli, Bouleng. Proc. Zool. Soc. 1896, p. 915, fig.

Tilapia rendalli, Bouleng. Tr. Zool. Soc. xv. 1898, p. 4.

Teeth rather small, forming 4 transverse series well separated from each other. Depth of body $2\frac{1}{4}$ to $2\frac{2}{3}$ in total length, length of head 3 to $3\frac{1}{2}$ times. Snout with steep, slightly convex upper profile, a little longer than the eye, the diameter of which is 4 times in length of head and $1\frac{1}{2}$ in interorbital width; mouth about $\frac{2}{3}$ width of head; maxillary not extending quite to below anterior border of eye; 4 series of scales on the cheek; large

scales on the opercle. Gill-rakers very short, 8 on lower part of anterior arch. Dorsal XVI 12-13; last spine longest, $\frac{1}{2}$ length of head. Pectoral pointed, a little longer than the head, extending as far as origin of anal. Ventral not reaching vent. Anal III 9-10; third spine as long as middle dorsals. Caudal rounded. Caudal peduncle not longer than deep. Scales cycloid, 30-32 $\frac{3}{12-13}$; lat. l. $\frac{20-22}{12-13}$. Body without distinct markings; snout and a spot on the opercle blackish; dorsal fin with blackish spots and oblique bars.

Total length 220 millim.

Upper Shiré River.

37. *TILAPIA AFFINIS*.

Tilapia affinis, A. Dum. Arch. Mus. x. 1859, p. 255.

Chromis affinis, Rochebr. Act. Soc. Linn. Bord. vi. 1883, p. 131.

Chromis aureus, Steind. Verh. zool.-bot. Ges. Wien, xiv. 1864, p. 229, pl. viii. fig. 5.

Teeth small, in 3 or 4 regular series in both jaws. Depth of body $2\frac{2}{5}$ to $2\frac{3}{5}$ in total length, length of head 3. Snout with straight upper profile, $1\frac{1}{4}$ to $1\frac{1}{2}$ diameter of eye, which is contained 4 times in length of head, and $1\frac{1}{5}$ to $1\frac{1}{2}$ in interorbital width; mouth nearly $\frac{2}{3}$ width of head, extending to below anterior border of eye; 3 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 8 or 9 on lower part of anterior arch. Dorsal XV 11-12; last spine longest, $\frac{1}{2}$ length of head, nearly $\frac{1}{2}$ longest soft rays. Pectoral pointed, $1\frac{1}{4}$ length of head, extending to origin of anal. Ventral reaching origin of anal. Anal III 8-10; third spine a little shorter than last dorsal. Caudal rounded. Caudal peduncle slightly deeper than long. Scales cycloid, 32 $\frac{3-4}{10-12}$; lat. l. $\frac{19}{12}$. Olive, a black opercular spot; soft dorsal with blackish spots more or less confluent into oblique streaks.

Total length 170 millim.

Senegal and Niger.

38. *TILAPIA BURTONI*.

Chromis burtoni, Günth. Proc. Zool. Soc. 1893, p. 631, pl. lviii. fig. C.

Tilapia burtoni, Bouleng. Tr. Zool. Soc. xv. 1898, p. 5.

Teeth in 5 closely-set series, outer moderately large, inner very minute. Depth of body $2\frac{3}{5}$ in total length, length of head $2\frac{1}{5}$. Snout with slightly concave upper profile, $1\frac{1}{3}$ diameter of eye, which is contained 4 times in length of head and equals interorbital width; mouth rather large, nearly $\frac{3}{4}$ width of head, extending to below anterior border of eye; 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 10 on lower part of anterior arch. Dorsal XIV 11; spines equal from the 10th, $\frac{1}{3}$ length of head, $\frac{1}{2}$ longest soft rays. Pectoral $\frac{4}{5}$ length of head, extending as far as origin of anal. Ventral prolonged in

a filament, extending beyond origin of anal. Anal III 9; third spine a little shorter than longest dorsals. Caudal rounded. Caudal peduncle a little longer than deep. Scales cycloid, $29 \frac{3-3\frac{1}{2}}{11}$; lat. l. $\frac{21}{10}$. Olive, a dark opercular spot; two dark bars across the upper surface of the snout; a dark streak behind the eye.

Total length 95 millim.

Lake Tanganyika.

39. *TILAPIA BUETTIKOFERI*.

Chromis büttikoferi, Hubrecht, Notes Leyd. Mus. iii. 1881, p. 66; Steind. op. cit. xvi. 1894, p. 39.¹

Teeth rather large (10 on each side in the outer row of the upper jaw). Depth of body 2 to $2\frac{1}{4}$ in total length, length of head 3 to $3\frac{2}{3}$. Snout as long as the eye, which is contained 3 times in length of head; 5 or 6 series of scales on the cheek. Gill-rakers short, 11 on lower part of anterior arch. Dorsal XIV-XV 15-16. Pectoral as long as or a little shorter than the head, not extending so far as origin of anal. Ventral prolonged into a filament, extending beyond origin of anal. Anal III 10-11. Caudal rounded (?). Scales cycloid, $29-30 \frac{4-5}{10-12}$; lat. l. $\frac{20-22}{11-12}$. 8 dark bars, the first two across the head, the last two on the caudal peduncle; these bars a little broader than the spaces between them.

Total length 105 millim.

St. Paul's River, Liberia.

40. *TILAPIA POLYCENTRA*.

Tilapia polycentra, A. Dum. Arch. Mus. x. 1859, p. 254.

Chromis polycentra, Günth. Cat. iv. p. 270 (1862).

Depth of body $2\frac{2}{3}$ in total length. 3 series of scales on the cheek. 9 gill-rakers on lower part of anterior arch. Dorsal XVIII 8. Anal III 7. Caudal rounded. Scales cycloid, $24 \frac{3\frac{1}{2}}{x}$. Scales finely dotted with blackish; soft dorsal with alternating series of dark and light spots and a large black spot in front.

Total length 100 millim.

Gorea.

41. *TILAPIA KIRKI*.

? *Ctenochromis strigigena*, Pfeffer, Jahrb. Hamb. wiss. Anst. x. 1893, p. 155, pl. ii. figs. 5-8.

Chromis kirkii, Günth. Proc. Zool. Soc. 1893, p. 624, pl. lvi. fig. A (1894).

? *Chromis strigigena*, Pfeffer, Thierw. O.-Afr., Fische, p. 18, fig. (1896).

¹ I am indebted to Dr. van Lidth de Jeude for notes supplementing the descriptions quoted.



E.



$\frac{1}{2}$





$\frac{1}{2}$



Ctenochromis kirkii, Pfeffer, l. c. p. 19.

Tilapia kirkii, Bouleng. Tr. Zool. Soc. xv. 1898, p. 4.

Teeth small, in 3 or 4 series in both jaws. Depth of body $2\frac{3}{5}$ to $2\frac{3}{4}$ in total length, length of head 3 times. Snout with straight upper profile, $1\frac{1}{4}$ to $1\frac{2}{3}$ diameter of eye, which is $3\frac{1}{2}$ to 4 times in length of head and equal to or a little less than interorbital width; mouth $\frac{2}{3}$ to $\frac{3}{5}$ width of head; maxillary extending to below nostril or between nostril and eye; 3 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 11 or 12 on lower part of anterior arch. Dorsal XV-XVII 9-11; last spine longest, about $\frac{1}{2}$ length of head, not or but little shorter than the soft rays. Pectoral pointed, as long as or a little shorter than the head. Ventral reaching vent or a little beyond. Anal III 8-10; third spine a little shorter than longest dorsal. Caudal truncate or feebly emarginate, the rays covered with small scales. Caudal peduncle $1\frac{1}{4}$ to $1\frac{1}{3}$ as long as deep. Scales finely denticulate on the border, 33-34 $\frac{3\frac{1}{2}-4\frac{1}{2}}{11-12}$; lat. l. $\frac{20-24}{12-16}$. Brownish above, silvery beneath, with a blackish stripe from the opercular spot to the root of the caudal; a second stripe may be present between the upper lateral line and the dorsal fin; both these stripes may be broken up into spots; soft dorsal and caudal with small dark and light spots forming more or less regular series.

Total length 150 millim.

Upper Shiré River and Lake Nyassa. *C. strigigena* is founded on young specimens from Mbuzini, German East Africa.

42. TILAPIA LETHRINUS.

Chromis lethrinus, Günth. Proc. Zool. Soc. 1893, p. 622, pl. lv. fig. A.

Tilapia lethrinus, Bouleng. Tr. Zool. Soc. xv. 1898, p. 4.

Teeth very small, in 3 or 4 series in both jaws. Depth of body nearly equal to length of head, $2\frac{2}{3}$ to $2\frac{3}{4}$ in total length. Snout long, with straight upper profile, $1\frac{2}{3}$ to 2 diameter of eye, which is 4 to $4\frac{1}{2}$ times in length of head and equals interorbital width; mouth small, $\frac{1}{2}$ width of head; maxillary extending to between nostril and eye; 3 series of scales on the cheek; large scales on the opercle. Gill-rakers large, falciform, 8 or 9 on lower part of anterior arch. Dorsal XV-XVI 10-11; last spine longest, not $\frac{1}{2}$ length of head, about $\frac{3}{4}$ length of soft rays. Pectoral pointed, a little shorter than the head. Ventral reaching vent or origin of anal. Anal III 8-9; third spine shorter and stronger than longest dorsal. Caudal with crescentic emargination, the rays covered with small scales. Caudal peduncle $1\frac{1}{3}$ as long as deep. Scales finely denticulate on the border, 33-34 $\frac{3-4}{10-11}$; lat. l. $\frac{26}{14-19}$. Silvery, brownish on the back; some blackish spots or a black stripe above the upper lateral line; a blackish stripe may be present along the side of the body and above the lower lateral line; dorsal and caudal chequered with blackish between the rays,

the spots having a tendency to form oblique stripes on the soft dorsal.

Total length 180 millim.

Lake Nyassa.

43. *TILAPIA JOHNSTONI*.

Chromis subocularis, part., Günth. Proc. Zool. Soc. 1893, p. 621, pl. liv. fig. B.

Chromis johnstoni, Günth. l. c. p. 622, fig. A.

Chromis tetrastigma, Günth. l. c. p. 623, fig. C.

Tilapia subocularis, Bouleng. Tr. Zool. Soc. xv. 1898, p. 4.

Tilapia johnstoni, Bouleng. l. c.

Tilapia tetrastigma, Bouleng. l. c.

Teeth in 4 or 5 series, the outer moderately large and separated by a considerable interspace from the others, which are very minute and conical. Depth of body nearly equal to length of head, $2\frac{3}{4}$ to 3 times in total length. Snout with straight upper profile, $1\frac{1}{3}$ to $1\frac{1}{2}$ diameter of eye, which is $3\frac{2}{3}$ to 4 times in length of head and equal to or somewhat greater than interorbital width; mouth $\frac{3}{5}$ width of head; maxillary extending to between nostril and eye; 3 or 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short, mostly notched, 11 or 12 on lower part of anterior arch. Dorsal XIV-XVI 10-11; last spine longest, $\frac{2}{5}$ to $\frac{1}{2}$ length of head, $\frac{3}{4}$ longest soft rays. Pectoral pointed, as long as or a little shorter than the head, extending to origin of anal. Ventral reaching vent or anal. Anal III 8-9; third spine a little shorter than longest dorsal. Caudal slightly notched, pointed above, rounded below. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ as long as deep. Scales finely denticulate on the border, 32-33 $\frac{3-4}{11-13}$; lat. l. $\frac{20-23}{14-16}$. Pale olive, with 6 to 8 more or less regular dark bars, which may be accompanied or replaced by a few blackish spots; a dark opercular spot; dorsal with oblique dark streaks and rows of small pale spots; caudal with small pale spots.

Total length 115 millim.

Lake Nyassa and Upper Shiré River.

44. *TILAPIA PECTORALIS*.

Ctenochromis pectoralis, Pfeffer, Jahrb. Hamb. wiss. Anst. x. 1893, p. 153, pl. ii. figs. 3, 4, 7, and Thierw. O.-Afr., Fische, p. 16, fig. (1896).

Teeth in 5 rows in both jaws, inner very minute. Depth of body nearly equal to length of head, $2\frac{4}{5}$ times in total length. Snout with straight upper profile, as long as the eye, the diameter of which is contained somewhat more than 3 times in length of head and a little exceeds interorbital width; mouth extending nearly to below anterior border of eye; 3 series of scales on the cheek; larger scales on the opercle. Gill-rakers very short, 10 on lower part of anterior arch. Dorsal XV-XVI 8-9; soft rays somewhat produced. Pectoral pointed, nearly as long as head,

extending as far as origin of anal. Ventral reaching origin of anal. Anal III 8. Caudal truncate. Caudal peduncle as long as deep. Scales with denticulate edge, $30\frac{4}{10}$; lat. l. $\frac{21-22}{8-12}$. Brownish with 10 to 12 dark bars; a dark opercular spot; dark streaks and a large white, dark-edged ocellus on the soft dorsal and on the anal.

Total length 63 millim.

Korogwe, German East Africa.

45. *TILAPIA NUCHISQUAMULATA*.

Chromis nuchisquamulatus, Hilgend. Sitzb. Ges. naturf. Fr. 1888, p. 76.

Chromis (Haplochromis) obliquidens, Hilgend. l. c.¹

Ctenochromis nuchisquamulatus, Pfeff. Thierw. O.-Afr., Fische, p. 14.

Ctenochromis sawagei, Pfeff. l. c. p. 15.

Ctenochromis obliquidens, Pfeff. Arch. f. Nat. lxiii. 1897, p. 60.

Tilapia nuchisquamulata, Bouleng. Tr. Zool. Soc. xv. 1898, p. 5.

Tilapia sawagii, Bouleng. l. c.

Tilapia obliquidens, Bouleng. l. c.

Teeth small, in 5 to 8 rows. Depth of body $2\frac{1}{2}$ to $2\frac{6}{7}$ times in total length, length of head about 3 times. Snout with straight upper profile, a little longer than the eye, which is $3\frac{1}{2}$ to $3\frac{3}{4}$ times in length of head, and equals or a little exceeds interorbital width; mouth with thick and broad lips, extending to below anterior border of eye or slightly beyond; 3 or 4 series of scales on the cheek; large scales on the opercle. 10 gill-rakers on lower part of anterior arch. Dorsal XVI 8-10; last spine longest, about $\frac{2}{5}$ length of head. Pectoral pointed, extending to origin of anal or a little beyond. Ventral reaching vent or anal. Anal III 8-9. Scales ctenoid, 28-31 $\frac{6-7}{11-12}$; scales on occiput and nape very small. Olive or brownish, with more or less distinct dark cross-bars, with or without a dark lateral stripe; a dark opercular spot; soft dorsal with dark and light spots: three or four round white spots on the posterior half of the anal; ventrals black.

Total length 125 millim.

Victoria Nyanza.

46. *TILAPIA ROSTRATA*, sp. n. (Plate XII. fig. 1.)

Teeth very small, in 4 series in both jaws. Depth of body $3\frac{1}{2}$ times in total length, length of head $2\frac{3}{4}$. Snout very long and pointed, with slightly concave upper profile, twice as long as diameter of eye, which is $4\frac{1}{2}$ in length of head and equals interorbital width; mouth $\frac{2}{5}$ width of head; maxillary extending to between nostril and eye; 3 series of scales on the cheek; large scales on the opercle. Gill-rakers rather long and slender, 21 on

¹ I am indebted to the kindness of Prof. Hilgendorf for notes on the type specimen.

lower part of anterior arch. Dorsal XVI 11; last spine longest, $\frac{2}{3}$ length of head, a little shorter than soft rays. Pectoral pointed, $\frac{2}{3}$ length of head, not extending as far as origin of anal. Ventral reaching vent. Anal III 9; third spine a little shorter than last dorsal. Caudal rather deeply emarginate. Caudal peduncle $1\frac{1}{2}$ as long as deep. Scales with finely denticulate edge, 35 $\frac{4-5}{14}$; lat. l. $\frac{23-24}{19-21}$. Pale brown above, silvery white beneath; five dark brown cross-bars, broken up into large spots; a small dark brown opercular spot; a large brown spot at base of caudal; fins white.

Total length 105 millim.

A single specimen from Lake Nyassa. Collected by Miss M. Woodward; presented by Miss S. C. McLaughlin.

47. *TILAPIA WILLIAMSII*.

Chromis williamsi, Günth. Proc. Zool. Soc. 1893, p. 624, pl. lvi. fig. C.

Tilapia williamsi, Bouleng. Tr. Zool. Soc. xv. 1898, p. 4.

Teeth moderate, in 5 or 6 closely-set series in both jaws. Depth of body equal to length of head, 3 times in total length. Snout with slightly convex upper profile, $1\frac{1}{3}$ diameter of eye, which is 4 times in length of head and $1\frac{1}{3}$ in interorbital width; mouth $\frac{2}{3}$ width of head; maxillary extending to below anterior border of eye; 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 10 on lower part of anterior arch. Dorsal XVII 8; last spine longest, nearly $\frac{1}{2}$ length of head, $\frac{3}{4}$ longest soft rays. Pectoral obtusely pointed, $\frac{3}{4}$ length of head, not extending to origin of anal. Ventral reaching vent. Anal III 7; third spine a little shorter than last dorsal. Caudal rounded, basal half densely scaled. Caudal peduncle slightly longer than deep. Scales finely denticulate on the border, 31 $\frac{5-7}{13}$; lat. l. $\frac{23}{11}$. Dark brown, with scattered blackish spots; a blackish opercular spot; a round blackish spot at the root of the caudal; fins grey, dorsal broadly edged with black; two small round white spots on the posterior part of the anal.

Total length 105 millim.

Lake Nyassa.

48. *TILAPIA CALLIPTERA*.

Chromis callipterus, Günth. Proc. Zool. Soc. 1893, p. 623, pl. lv. fig. B (1894); Bouleng. op. cit. 1896, p. 916.

Chromis subocularis, part., Günth. l. c. p. 621.

Ctenochromis callipterus, Pfeffer, Thierw. O.-Afr., Fische, p. 19.

Tilapia calliptera, Bouleng. Tr. Zool. Soc. xv. 1898, p. 4.

Teeth small, in 3 to 5 series in both jaws. Depth of body $2\frac{2}{3}$ to $2\frac{4}{5}$ in total length, length of head $2\frac{3}{4}$ to 3 times. Snout with straight upper profile, $1\frac{1}{4}$ to $1\frac{1}{2}$ diameter of eye, which is $3\frac{1}{2}$ to 4 times in length of head and equal to or a little less than interorbital width; mouth $\frac{2}{3}$ to $\frac{3}{4}$ width of head; maxillary extending

to below anterior border of eye; 3 or 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 8 to 10 on lower part of anterior arch. Dorsal XIV-XVI 8-10; last spine longest, $\frac{2}{5}$ to $\frac{1}{2}$ length of head, $\frac{2}{3}$ to $\frac{4}{5}$ longest soft rays. Pectoral pointed, $\frac{3}{4}$ to $\frac{4}{5}$ length of head, not extending quite so far as origin of anal. Ventral reaching origin of anal or a little beyond. Anal III 7-8; third spine as long as or a little shorter than longest dorsal. Caudal rounded. Caudal peduncle as long as deep. Scales finely denticulate on the border, 30-33 $\frac{3-4}{11-12}$; lat. l. $\frac{19-22}{10-13}$. Brown or olive, with more or less distinct dark and light spots on the soft dorsal and caudal; anal often with a few large round white spots; a dark band from below the eye to the angle of the mouth; a dark opercular spot.

Total length 140 millim.

Shiré River and Lake Nyassa.

49. *TILAPIA MONTEIRI*, sp. n.

Teeth in outer row moderate, separated by an interspace from a band of 5 transverse series of minute closely-set teeth. Depth of body equal to length of head, 3 times or not quite 3 times in total length. Snout with straight upper profile, $1\frac{1}{4}$ diameter of eye, which is $3\frac{1}{2}$ in length of head and slightly exceeds interorbital width; mouth rather large, $\frac{3}{4}$ width of head; maxillary extending to below anterior border of eye or slightly beyond; 4 or 5 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 10 on lower part of anterior arch. Dorsal XIV-XV 10-11; spines equal in length from the 5th, $\frac{1}{3}$ length of head, a little more than $\frac{1}{2}$ length of longest soft rays. Pectoral pointed, $\frac{3}{4}$ length of head, not extending to origin of anal. Ventral reaching origin of anal. Anal III 6-7. Caudal rounded, densely scaled at the base. Caudal peduncle a little deeper than long. Scales mostly with finely denticulate edge, 30 $\frac{3-4}{12}$; lat. l. $\frac{19-20}{12}$. Brownish; soft dorsal with oblique dark streaks.

Total length 95 millim.

Congo. A single specimen collected by the late J. J. Monteiro. A second specimen of the same size, from Matadi, forms part of the collections made by order of the Congo Free State.

50. *TILAPIA FASCIATA*.

Chromis fasciatus, Perugia, Annu. Mus. Genova, (2) x. 1892, p. 970.

Three series of teeth in the jaws, outer moderately large, inner very minute. Depth of body equal to length of head, $2\frac{1}{2}$ to $2\frac{3}{5}$ in total length. Snout with straight upper profile, as long as the eye, the diameter of which is 3 times in length of head and exceeds interorbital width; 3 or 4 series of scales on the cheek; mouth small, maxillary reaching to between nostril and eye. Gill-rakers short, slender, 10 on lower part of anterior arch. Dorsal XV 10-11;

spines equal in length from the fourth or fifth; soft rays produced, the longest twice as long as the longest spines. Pectoral obtusely pointed, $\frac{2}{3}$ to $\frac{3}{4}$ length of head, not extending to origin of anal. Ventral reaching origin of anal. Anal III 6-7; third spine as long as longest dorsal. Caudal rounded. Caudal peduncle as long as deep. Scales ctenoid, 29-30 $\frac{3-4}{12}$; lat. l. $\frac{19-20}{10-14}$. Yellowish, uniform or with 8 or 9 dark bars.

Total length 45 millim.

Lower Congo.

51. *TILAPIA ACUTICEPS*.

Chromis acuticeps, Steind. Verh. zool.-bot. Ges. Wien, xvi. 1866, p. 764.

Teeth very small, in 2 series. Depth of body a little less than length of head, about 3 times in total length. Snout with straight upper profile, $1\frac{1}{3}$ diameter of eye, which is 4 times in length of head and equals interorbital width; mouth moderate, $\frac{2}{3}$ width of head; maxillary extending to between nostril and eye; 4 or 5 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 9 on lower part of anterior arch. Dorsal XIV-XV 10-11; last spine longest, about $\frac{2}{3}$ length of head and $\frac{3}{4}$ longest soft rays. Pectoral obtusely pointed, about $\frac{2}{3}$ length of head, not extending to origin of anal. Ventral reaching vent. Anal III 8-9; third spine nearly as long as last dorsal. Caudal rounded. Caudal peduncle as long as deep. Scales ctenoid, 30 $\frac{4}{11}$; lat. l. $\frac{18-22}{12}$. Yellowish brown, with several dark bars; a black opercular spot; a dark streak from below the eye to the angle of the mouth; vertical fins with small blackish spots, forming oblique streaks on the soft anal.

Total length 85 millim.

Angola and district of the Victoria Falls.

52. *TILAPIA LIVINGSTONII*, sp. n. (Plate XI. fig. 2.)

Teeth in 6 series in both jaws, outer moderately large and bicuspid, inner very small, closely-set, and tricuspid. Depth of body scarcely greater than length of head, 3 times in total length; snout descending in a strong curve, as long as the eye, the diameter of which is $3\frac{1}{2}$ times in length of head and slightly exceeds interorbital width; mouth moderately large, $\frac{3}{4}$ width of head, extending to below anterior border of eye; 3 or 4 series of scales on the cheek; larger scales on the opercle. Gill-rakers short, 8 on lower part of anterior arch. Dorsal XVII 9; last spine longest, not quite $\frac{1}{2}$ length of head, $\frac{2}{3}$ longest soft rays. Pectoral pointed, $\frac{3}{4}$ length of head, not extending to origin of anal. Ventral reaching origin of anal. Anal III 8; third spine a little shorter than last dorsal. Caudal rounded. Caudal peduncle as long as deep. Scales with strongly denticulate edge, 33 $\frac{5-6}{12}$; lat l. $\frac{22-23}{11-12}$. Brownish above, with 7 dark bars, the first on the nape, the penultimate on

the caudal peduncle, the last on the root of the caudal fin; two round white spots on the anal fin.

Total length 73 millim.

A single specimen, collected by Dr. Livingstone on the Zambesi Expedition.

53. *TILAPIA DESFONTAINESI*. (Plate XI. fig. 3.)

Labrus desfontainii, Lacép. Hist. Poiss. iv. pp. 54 & 160 (1802).

Sparus (?) *desfontainii*, Gervais, Zool. Pal. Gén. p. 208, pl. xlv. fig. 4 (1869).

Chromis desfontainii, Sauvage, Bull. Soc. Philom. (7) i. 1877, p. 160; Vincig. Ann. Mus. Genova, xx. 1884, p. 429; Rolland, Rev. Scientif. (4) ii. 1894, p. 418, fig.

Teeth in 3 series in both jaws, outer moderately large, uni- or bicuspid, inner very minute. Depth of body $2\frac{1}{4}$ to $2\frac{1}{2}$ in total length, length of head $2\frac{2}{3}$ to $2\frac{4}{5}$. Snout with straight upper profile, $1\frac{1}{3}$ to $1\frac{1}{2}$ diameter of eye, which is 4 to $4\frac{1}{2}$ times in length of head and equal to or slightly less than the interorbital width; mouth moderate, $\frac{2}{5}$ to $\frac{2}{3}$ width of head; maxillary extending to below anterior border of eye; 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short, tubercle-like, 7 or 8 on lower part of anterior arch. Dorsal XV-XVI 10-11; last spine longest, $\frac{2}{3}$ to $\frac{1}{2}$ length of head, $\frac{3}{5}$ to $\frac{2}{3}$ longest soft rays. Pectoral obtusely pointed, $\frac{2}{3}$ to $\frac{3}{4}$ length of head, not extending to origin of anal. Ventral reaching vent or origin of anal. Anal III-IV 8-10; third spine shorter and stronger than last dorsal. Caudal rounded. Caudal peduncle as long as deep. Scales ctenoid, 30-33 $\frac{4-5}{14-16}$; lat. l. $\frac{17-21}{9-15}$. Brownish or olive; a more or less distinct dark streak from below the eye to the angle of the mouth; a dark opercular spot; vertical fins with small dark and light spots; ventrals black.

Total length 90 millim.

Algerian and Tunisian Sahara.

This species links *Tilapia* with *Paratilapia*. In some specimens, as observed by Sauvage, nearly all the outer teeth are conical and unicuspid, whilst in others all or most of the outer teeth are provided with a lateral cusp situated on the outer side at a considerable distance from the apex.

54. *TILAPIA FLAVII-JOSEPHI*.

Chromis flavii-josephi, Lortet, Arch. Mus. Lyon, iii. 1883, p. 141, pl. viii. fig. 2.

Teeth as in *T. desfontainesi*. Depth of body equal to length of head, $2\frac{3}{4}$ in total length. Snout with straight upper profile, $1\frac{1}{3}$ to $1\frac{1}{2}$ diameter of eye, which is 4 to $4\frac{1}{2}$ times in length of head and equals interorbital width; mouth large, $\frac{2}{3}$ to $\frac{3}{4}$ width of head; maxillary extending to below anterior border of eye; 3 or 4 series of scales on the cheek; large scales on the opercle. Gill-rakers short, 8 on lower part of anterior arch. Dorsal XIV-XV 8-9;